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The British Columbia Mining Exchange

AND ENGINEERING NEWS

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No. 1

British Columbia Mining in 1912

Some Further and More Detailed Particulars of the Progress of British Columbia Mines During the Year Just Closed—Encouraging Conditions in Nelson, Boundary and Similkameen—Coast Districts Make Grand Showing

(Compiled For The B. C. Mining Exchange, By E. JACOBS.)

Continuing the Review of Mining in British Columbia in 1912, commenced in the December number of the B. C. Mining Exchange, the following additional information is supplied:

NELSON MINING DIVISION

Last month some particulars were given relative to mines around the city of Nelson, of others in Ymir camp, and others about Salmo. The following is now added:

Granite-Poorman Mines, Near Nelson

The Kootenay Gold Mines, Ltd., owning the Granite-Poorman group of gold mines and 20-stamp mill, situated near Nelson, recently authorized an increase in its capital to \$500,000, and is endeavoring to sell sufficient of the new shares to give it a fund of \$25,000 for needed development work. The Granite-Poorman mines have produced gold for a number of years; the approximate aggregate value of the production of the last six years is more than \$300,000. For several years the property was worked by Messrs. Thos. Gough, E. E. Guille and J. P. Swedberg; in the latter part of 1910 the Kootenay Gold Mines, Ltd., was organized to acquire and operate the mines and stamp-mill, Mr. Gough remaining in charge as manager. A serious drawback to the more successful working of the property has always been a lack of capital to do considerable development ahead of ore-extraction, and it is with the object of removing this obstacle to substantial progress that the effort is now being made to secure the money needed to effectively develop the mines, by opening at a lower level the veins known to occur, and so make readily accessible an ample ore supply for the stamp mill the year through.

The following description has been taken from Mr. O. E. LeRoy's report on the Geology of Nelson Map Area, printed in the "Summary Report of the Geological Survey of Canada, 1911."

"The Granite-Poorman group is situated about five miles west of Nelson

at an altitude of from 1200 to 2400 ft. above the west arm of Kootenay lake. The group consists of 15 claims and fractions, on which five main veins have been partially developed.

"The mill, situated about one mile west of Granite station on the Canadian Pacific Railway, is equipped with 20 stamps, amalgam plates, and four Wilfley tables. An 8-drill Rand compressor is also in the mill building. Both water and electric-power are used. A Riblet aerial tram, about 5000 ft. long with a drop of 1200 ft., connects the Granite shaft with the mill. Loading stations at convenient points along the line are connected with the several lower levels of the workings.

"The production from 1899 to January, 1912, amounted to about 83,175 tons. About 80 per cent. of the gold is collected on the plates, and 10 per cent. is recovered in the concentrates. The latter average about 1.5 oz. of gold and 1.5 per cent. of copper per ton. The milling ore ranges in gold value recovered from \$6.50 to \$12 per ton, with a very low silver content.

"The veins are of the fissure type, and occur in a medium or coarse-grained quartz hornblende diorite. They vary in thickness from a few inches to more than six feet, and the length so far as developed ranges from 500 to 2500 ft. Usually a certain width of the country rock, either on the hanging or the footwall side, is sufficiently mineralized to stope. The predominant and almost exclusive gangue mineral is quartz. The chief metallic mineral is pyrite, with which is locally associated small quantities of galena, chalcopyrite, and—in rare instances, in the Poorman mine—scheelite. The galena is always an indicator of high gold-value. Limonite is present in the oxidized portions of the veins in which visible free gold may occasionally be seen. The veins are cut by basic mica dikes (minettes), and are faulted, but usually with small displacements. The main fault cutting the Granite and

Beelzebub veins has a throw of at least 180 ft.

"The five veins, going from west to east, are the Hardscabble, Poorman, Greenhorn, Granite and Beelzebub. At the level of No. 4 crosscut tunnel of the Poorman, and taking the Hardscabble vein as the initial point, the other veins lie east of it at the following approximate distances, respectively; Poorman, 330 ft.; Greenhorn, 1300 ft.; Granite, 1900 ft.; Beelzebub, 2020 feet.

Hardscabble Vein—The Hardscabble vein is intersected by No. 4 crosscut tunnel of the Poorman, 60 ft. from the portal. The vein is now being developed, and in recent drifting has shown an ore body at least 300 ft. long, with an average width of two feet. The vein strikes N. 10 deg. W., with an average dip of about 45 degs. to the Northeast. Little stoping has been done so far; the ore stoped, however, is on an average of higher grade than is found in the other veins, and the gold is coarser.

Poorman Vein—The Poorman vein has been developed by five levels, giving a depth on the vein of 700 ft. The bulk of the ore mined and milled by the company in 1911 was derived from the Poorman, and stoped between the fourth and fifth levels. The main avenue is No. 4 crosscut, which intersects the vein at about 480 ft. from the portal. This level is connected to No. 5 by an incline shaft. The productive portion of the vein above No. 4 has in great part been stoped out. The vein strikes N. 22 deg. W., and dips Northeast from 30 to 40 degs. The oreshoot is continuous from the surface, and on the fourth level was stoped for a length of more than 1000 ft. The shoot pitches rather flatly to the Southeast. The thickness varies from a few inches to 8 ft., and the average stoping width is about two feet. The ore stoped during the last five years averaged \$6.50 in recovered value. The average run of the ore in the vein proper is about \$15, but the width of mineralized rock stoped be-

low the footwall lowers the average to the former figures. The gold is 'shotty' in character and easily recovered on the plates. Free gold in small but extremely rich pockets has been found at rare intervals down to the present lowest level. Scheelite also is found but is of rare occurrence. It has been found in small grains, pale brown in color, in massive white quartz. The zone of oxidation is shallow in the Poorman, and does not exceed 50 ft. in depth.

"Greenhorn Vein—The Greenhorn vein has been opened by two drifts, giving a vertical depth of 150 ft. The vein strikes N. 33 degs. W., and dips Northeast at 45 degs. Stopping has been carried on from the surface to within 30 ft. of the lower level. The shoot was about 300 ft. long, with an average thickness of three feet. Above the sill of the first level (Greenhorn tunnel), which represents the limit of oxidation, the ore averaged \$12 per ton in recovered gold value.

"Granite Vein—The Granite vein has been developed by seven levels, giving a vertical depth of 150 ft. The several levels in ascending order are, the lower tunnel, 230 ft. above No. 4 level of the Poorman, the Davenport, the Granite shaft with four levels, the lower being the White tunnel, and the Red Rock tunnel.

"The vein varies in strike from N. 12 degs. W. to N. 50 degs. W., with an average dip to the Northeast of 45 degs. The stopping width averages 2 ft. 6 in.

"In the absence of through connections with all the workings, it is impossible to outline with accuracy the limits of pay ore. There appear, however, to be four shoots: The Red Rock; the Granite shoot 285 ft. long on the level of the White drift and extending to the surface at the Granite shaft, 280 ft. high on the dip; the White shoot, 230 ft. long; and the shoot in the lower tunnel, 200 ft. long with a maximum height of 80 feet. A fault cuts this latter shoot off to the south on a strike of N. 85 degs. E. and a North dip of 50 degs., the veins at this point striking N. 30 degs. W. and dipping Northeast at 55 degs. The fault zone, from one ft. to 17 ft. thick, consists of crushed country rock, gouge, and dragged ore. The throw along the horizontal plane is not less than 180 ft. Sufficient work has not yet been done to definitely locate the vein South of the fault.

"The ore is largely oxidised, and the gold flaky in character. The recovered value in gold averaged \$8 per ton. In the Red Rock shoot crude ore ran \$45 a ton in carload lots, and the milling ore averaged \$11 a ton.

"Beelzebub Vein—The Beelzebub vein has been opened on two levels giving a vertical depth of 175 ft. between them. The vein varies in strike from N. 30 degs. W. to N. 40 degs. W. and dips Northeast at from 30 to 50 degs. The Eastward continuation of the fault displacing the Granite vein was encountered and until the throw is definitely determined in the Granite workings, no further work will be done on this vein. The stoped width varies from 14 to

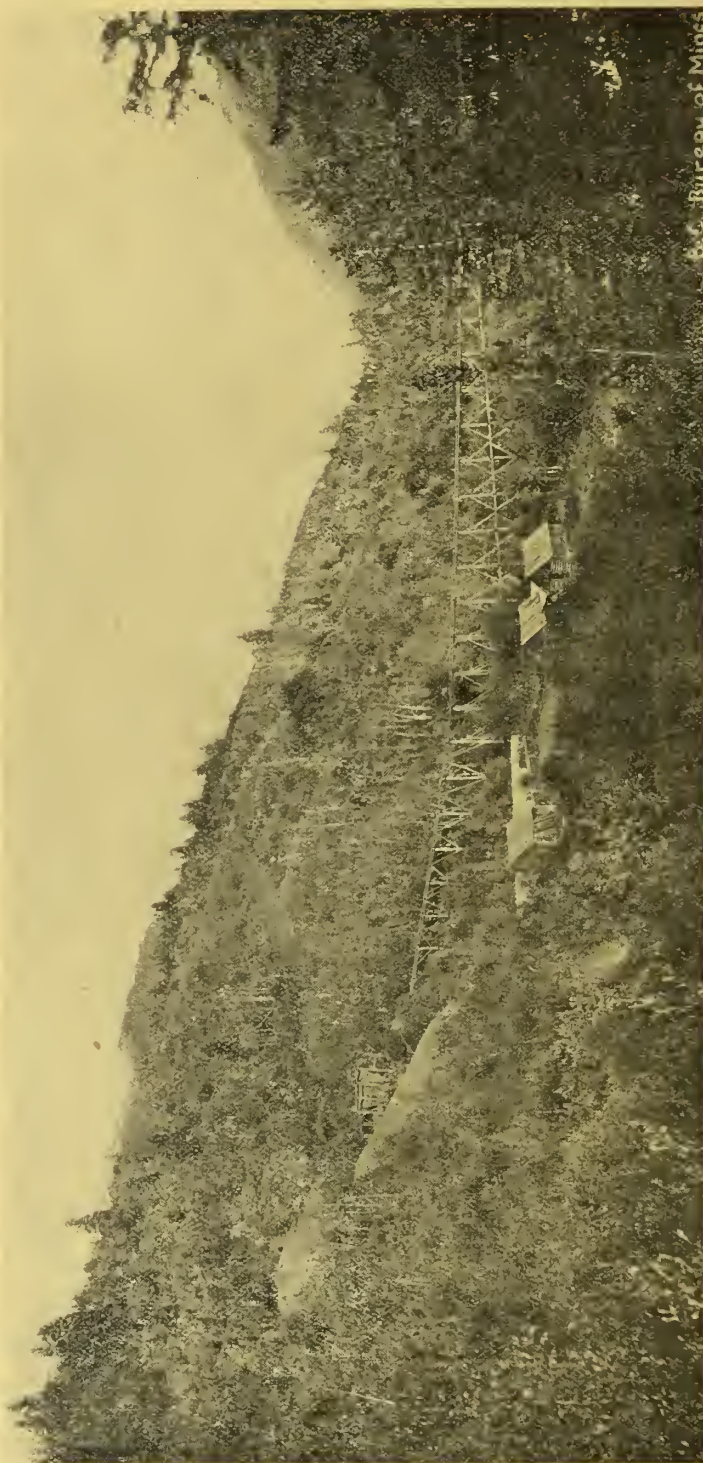
22 inches. One thousand tons stoped above No. 2 level yielded in recovered gold \$9 a ton. One rich pocket of oxidized ore gave a return of \$7000 from a barrowload."

More work has been done since Mr. LeRoy's examination of the mine in 1911 for the foregoing report. There is though, ore in the bottom levels on all five veins. The Hardscrabble drift

is in 1100 ft. with ore still in the face and about 600 ft. of backs.

THE SILVER KING GROUP

Brief mention was made last month of the Consolidated Mining and Smelting Company of Canada, Ltd., having arranged to acquire a three-fourths interest in the Silver King and Dandy groups of mineral claims, situated on



Ben d'Or Mine—Cadwallader Creek—Lillooet Mining Division.

B. C. Bureau of Mines

Toad Mountain, near Nelson. Since it may be expected that the Silver King will during the ensuing year again become a producing mine the time appears to be opportune for the republication of information relative to its history, so the following account is now given:

The earliest discovery of mineral made in Nelson district was on the property afterward known as the Silver King. The discovery was made accidentally, in 1886, and the following year the first claim was located.

In the introduction to his Bulletin No. 3, 1896, Mr. Wm. A. Carlyle, then provincial mineralogist, observed: "The mining industry of British Columbia, it must be remembered, apart from the placer-gold and coal-mining, is of very recent inception. Until eight or nine years ago the great extent of the mountainous country south of the Canadian Pacific Railway, to the International Boundary line, was a wilderness known to few save Indians and hunters, or the prospectors for gold-diggings, but the finding of silver-copper ore on Toad mountain, and the beginning of work on the silver-lead ore deposits on the east of Kootenay lake, discovered many years ago by men in the Hudson Bay Company's employ, with the subsequent discovery among the mountains nearby of other silver ledges, signaled the commencement of mining in Kootenay."

Concerning the Silver King group, Mr. Carlyle reported: "The Hall Mines Co., Ltd., now owns 18 claims, of which nine, or 196.6 acres, are Crown-granted, and the remainder, or 312.8 acres, mineral claims. Not all these claims are on the silver-copper belt, but the Silver King, Kootenay Bonanza, American Flag, and Koh-i-nor, or 56.9 acres, constitute the group upon which the extensive mining operations are being prosecuted, while the Britannia, Eureka, J. B. D., Grand Rose, Thistle, and Shamrock are locations close by on the gold belt, in the same geological formation. The main group of four, being gold locations, or made in 1886-7, possess apex rights, and are located on Toad mountain, five miles from Nelson, or eight and a half miles by wagon road.

Formation—This copper-silver lode is situated in the greenish diabases that, in proximity to the vein, are generally massive, but also schistose, the planes of the schistose laminations being nearly vertical, and also nearly parallel with the trend of the ore-zones that strike east and west, magnetic, and dip south 70 degs. In the main workings of the big lode no distinct walls can be seen, but in the largest stope the highest-grade ore had lower-grade ore receding from it on either side, indicating that probably the ore-bearing solutions had permeated and impregnated the country rock on both sides of the channel or crevice up which they had risen. In several places could be seen where the solutions had evidently followed divergent crevices and formed local impregnations leading off from the main orebody. Several fault planes of different strike and pitch traverse the lode, but with, as yet apparent, a very small amount of dislocation."



Silver Lake Pass—Hudson Bay Mt.

Mr. Robert R. Hedley, who for a number of years was manager of the Hall Mines smelting works at Nelson, prepared for an official publication the following information: "The company was organized in England in 1895 as The Hall Mines, Limited, to operate a group of mines known as the Silver King group. A tramway 4 1-2 miles long and having a drop of 4500 ft., was built from the mine to the smelter site, and a smelter erected having a capa-

city of 160 tons a day. In 1896 the furnace was blown in; the following year, the mine giving good promise, a larger furnace was built with dimensions of 44 by 144 in. at the tuyeres, which furnace proved to have an average capacity of about 240 tons per day, producing a matte containing about 48 per cent. copper, which was roasted and brought forward to blister in a reverberatory plant erected for that purpose. In 1896 the smaller furnace was pro-

vided with a crucible and some experimental smelting done on lead-ores, the result of which was the establishment by the company of a custom lead-smelting business. In 1900, Silver King ore showed deterioration, both in respect to quantity and quality, and it was decided to prosecute extensive development operations at the mine. To this end the company was reorganized under the name of The Hall Mining and Smelting Co., Ltd. The production of copper-ores being small, the large furnace was next altered to smelt lead-ore, while the small furnace was utilized for the treatment of the ore from the Silver King. In consequence of this development, the mine, for a period, maintained a comparatively large production, but in 1902 was condemned as exhausted by the manager then in charge, who, supported by the opinion of two independent mining engineers, reported the exhaustion of the orebodies, and work at the mine was then suspended by the company. The operation of the smelter was afterward confined entirely to the treatment of lead-ores from outside mines, and this business was carried on for some years, handicapped by an inadequate plant. Meanwhile, the mine was leased by a former superintendent who succeeded in extracting from the upper levels a very considerable tonnage of ore of good grade, which was either sent for treatment to the Hall Mining Company's small copper furnace, or shipped to the copper furnaces at Trail. During the period of ten years up to December 31, 1906, the quantity mined was 200,466 tons, containing 4-

257,963 ozs. of silver, and 13,948,178 lb. of copper; approximately 3.5 per cent. copper and 21 ozs. of silver per ton. Shipments in 1907 aggregated 2279 tons, containing 159,613 lb. of copper and 28,320 oz. of silver. In 1905, after careful consideration, it was decided to modernize the smelter, and a new sample-mill and crushing plant, improved bin system, and a Huntington-Heberlein roaster with six converting-pots, was installed while the plant generally was overhauled with a view to economizing labor in transfer of material. This equipment for roasting proved inadequate, but the company's finances did not admit of further expenditure to remedy the deficiency. Various adverse conditions combined to bring about an absolute suspension of operations, a final clean-up was made, and the plant went out of commission in September, 1907."

(Note by E. J.—The smelting works has since been destroyed by fire.)

In the "Summary Report of the Geological Survey of Canada, 1911," Mr. O. E. LeRoy includes the following in his report on the "Geology of Nelson Map-Area":

"The Kootenay Bonanza Mines, Ltd., owns a group of about 40 claims situated on the slopes of Toad mountain. It includes those of the Hall Mining and Smelting Co., the Dandy & Ollie Consolidated, the Starlight Mines, the Kootenay Development Syndicate, and several smaller groups. This consolidation was effected in 1910 by Mr. R. S. Lennie. The Silver King mine is

the oldest and best known of the whole group.

"The mine has been developed by open-cuts, four tunnels (Nos. 1, 3, 4, and 5), with a main shaft from the level of No. 5 to the tenth level, giving a total vertical depth on the lode of 927 ft. From No. 8 level to the surface the several levels are connected by stopes and raises. As the mine was idle, only the surface openings were examined.

"There are two approximately parallel lodes, named, respectively, the main and the south vein, with a cross-vein between the 5th and 6th levels. The latter is higher in silver and lower in copper than the main lode. The country rocks consist of chlorite and sericite schists, being the sheared equivalents of hornblende, porphyry and quartz porphyry, cut by later hornblende and mica dikes. The lodes practically coincide with the schists in strike and dip. The strike of the main lode is N. 65 degs. W. with a Southwest dip varying from 55 to 70 degs. The lodes are mineralized portions of the above-mentioned schists, caused by a very complete system of cross-fissures now filled with quartz and ore. From examples seen last season the ore appears more concentrated along the fissures and gradually diminishes on passing away from them. They occur at such short intervals, however, that the metallics are sufficiently disseminated throughout to form continuous stoping ground over considerable distances. The importance of the cross-fissures was noted in the early development, as evi-

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NOTE—On December 14, 28; January, 11, 25; February 8, 22; will omit calls at Lowe Inlet and Skeena, and will call at Naas River.

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denced by a statement that the ore-shoots crossed the lode at right angles.

"The stope-plan of the mine shows that the main lode has been stoped from the surface to the sill of No. 5 level, and the south lode from No. 5 to the level of No. 8.

"The length of the orebodies along the pitch of 40 deg. to the east is about 730 ft., and they were stated to average 12 ft. in thickness in the upper levels.

"The ore consists of tetrahedrite (grey copper), chalcopryite, pyrite, and galena disseminated through the schists and associated with quartz and calcite. The concentration of tetrahedrite at several points in the main orebody furnished very high-grade and profitable stoping-ground. Bornite and occasionally stromeyerite occurred in the superficial portions.

"Ore from the south lode has been subjected to experimental tests in England. If a satisfactory solution is evolved, there appears to be every indication of a large tonnage of low-grade ore available for stoping. In the further development and prospecting of these low-grade orebodies, it is by no means improbable that smaller shoots of high-grade ore will be discovered.

"The Dandy belongs to the same group and the claim covers the Western extension of the Silver King lode. The lowest tunnel on the Dandy is about 240 ft. below the level of No. 5 of the Silver Kings. A limited amount of stoping has been done above the level at and east of the intersection of the cross-cut and drift. The lode averages 4 1-2 ft. in thickness and is no doubt the continuation of one of the lodes of the King. The ore consists of chalcopryite, pyrite, galena, some zinc-blende with a gangue of schist, quartz, calcite, and some siderite."

Dundee Mine, Ymir Camp.

In the notes on Ymir camp by Mr. Edward Peters, printed last month, mention was made of the Dundee mine. The following additional information may be of interest:

The present owners have been doing work on the Dundee practically continuously, for the last three years. They commenced to drive an adit at the southwest corner of the property, at a point recommended by Mr. Bernard MacDonald in his report made some years ago, and this tunnel had been driven, by the beginning of last December, 1851 feet, in addition to which there had been some 600 feet of lateral work done, beside 400 feet of diamond-drilling. Most of the driving has been cross-cutting in country rock, the last 300 feet only having been on the lode.

During the cross-cutting, several showings of ore were encountered, and these will be explored later on. Recent efforts have been concentrated in endeavoring to get under the old shaft, and with the object of doing this the work of driving the tunnel has been pushed ahead as fast as has been practicable. Progress has been at the rate of about five feet a day, but at the beginning of December the face of the drive was still 500 feet from the point at which it will come under the shaft.

The intention is to continue until far enough to make a raise from the adit to connect with the old workings above, which were opened from the surface down to a depth of 260 feet, while the tunnel level will be, where the raise will be started, about 900 feet below the surface.

As to the lode itself—no continuous orebody has been found, but the vein is well-defined and running on a course and with a dip similar to those in the shaft workings, while diamond-drilling shows it to be about 40 feet wide between walls.

In the more recent work, bunches and small streaks of ore have been met with, so it is expected that the drive will shortly reach an ore-shoot of some importance. The part of the lode in which work was being done toward the end of the year consisted chiefly of quartz, heavily mineralized with iron pyrites, quantities of galena and zinc and a certain amount of intrusive country rock.

Power for drilling is supplied by a compressor, and the use of machine drills, of course, much expedites the work. Plans for some time to come do not include anything beyond the continuance of development work.

Motherlode Mine and Mill, Sheep Creek.

The Motherlode Sheep Creek Mining Company's new stamp mill was practically completed about the end of 1911, but it was not thought advisable to attempt to run water through wood-stave pipes while the temperature was so low as to cause risk of damage to the pipeline. Consequently it was May before ore-crushing was commenced at the mill. As this was the first mill fully equipped with modern gold-saving appliances established in Kootenay, it marked an advance in gold-milling practice in that district.

Between three and four years ago, Mr. Wm. Watson, of New York, a well-known mining engineer, examined and reported on the Motherlode property, then only a prospect. Later he undertook the development of the mine for his principals, chief among whom was Mr. John McMartin, of Cornwall, Ontario. The mine was developed to a depth of 500 feet below the ore-outcrop, and it was thereafter decided that there was a sufficiently large quantity of ore available to warrant the erection and equipment of an up-to-date stamp-mill and cyanide plant. The provision of these gold-saving facilities was commenced in the summer of 1911.

Beside the 10-stamp mill, an aerial tramway 3600 feet long, with a difference of 1000 feet between elevations of terminals, was constructed; also a water-line for power purposes. Materials for the pipe-lines were supplied by the Vancouver Engineering Works. They include two continuous red-fir stave 16-inch pipe-lines conveying water to a steel pipe-line 7000 feet long of pipe graded from 16 to 14-inch, which delivers water at the mill at an average effective pressure of 600-foot head. Power is obtained from six specially-designed Pelton water-wheels, which drive all mill machinery, and a compressor having a capacity of 1440 cu. ft. of free air per minute.

The equipment of the mill and cyanide plant includes Blake crusher, ten 1250-lb. stamps, Merrill's patent sizing cones, tube mill, amalgamating plates, Dorr continuous thickeners, Aldrich slime-pumps, four 8 by 25-foot Pachuca tanks, cyanide tanks, Merrill's clarifying and precipitation presses, and a full complement of accessories. The erection of the building and the arrangement of the plant have been carried out so as to allow of the addition of five more stamps and another tube mill at small further cost. The best talent available was employed in designing and equipping the mill, which was expected to prove a most efficient gold-saver.

Other Properties in District.

There are other mining properties in Sheep Creek and surrounding district of interest, but little information was obtainable concerning these, so they must be passed over for the time.

It is probable that production will be larger in 1913 than last year, for one or two new properties are in shape to ship ore, while those that have for some time past been producers are likely to continue to make a regular output of ore. Little mining was done in the Bayonne country, though further prospecting encouraged the expectation that good results will eventually be obtained in that part of Nelson mining division.

About Erie, the Arlington and Second Relief were both producers. The lessee of the former gave employment to ten miners and others; well on toward 1000 tons of ore was shipped.

TRAIL MINING DIVISION.

This district was dealt with extensively in the December issue of this publication.

BOUNDARY DISTRICT.

The Boundary district, the mines of which together produce more copper than those of any other part of Canada, led in 1912 in British Columbia in respect of both the quantity of ore mined and the total value of metals produced. The ore-output of the mines in the Greenwood and Grand Forks divisions exceeded 1,900,000 tons, as compared with 1,187,000 tons in 1911, and 1,654,000 tons in 1910. (It will be remembered that the strike at the Crownsnest collieries adversely affected production in 1911.) It is customary to include the production of Osoyoos Division with that of the others above-mentioned, but, leaving that out for the present, a rough approximation of the output of metals from Greenwood and Grand Forks divisions in 1912 is as follows: Gold, 68,000 oz.; silver, 380,000 oz.; and copper, 33,000,000 lbs. For statistical purposes there will be added about 37,000 oz. of gold from the Hedley Gold Mining Co.'s mines in Osoyoos division. The total value of the output (including \$760,000 from Hedley) was approximately \$7,750,000, which constitutes a record for the year as compared with that of metaliferous minerals from other districts in the province. It will not, however, be as high as the Coast district for total value of all mineral production, for there coal and structural materials reached a total value in 1912 of about

\$9,000,000, in addition to between \$2,000,000 and \$3,000,000 for metallic minerals.

Granby Consolidated.

The Granby Consolidated Mining, Smelting, and Power Company, Ltd., in 1912 mined and smelted about 1,240,000 tons of ore from its own mines in Phoenix camp. This compares with 606,000 tons in 1911 and 1,075,000 tons in 1910. It is claimed that as much new ore was developed during the company's last fiscal year as was shipped to its smelter, and that there is still in the mines between 6,600,000 and 7,000,000 tons of minable ore "estimated in sight." Development work in the company's mines was carried on as usual; the total for the year was rather more than 11,000 lineal feet of drifts, cross-cuts, and raises. Diamond-drilling runs to about 1000 feet a month when in full operation, and the cost of this is put down as adding to development costs about 14 cents, bringing mining costs up to about 78 cents a ton of ore mined. Much of the drilling is done in new territory outside of the sphere of present mining operations, with the object of finding new ore-bodies. In the early summer of 1911 a map was prepared of an area to be systematically drilled, and the positions of drill-holes determined upon. Drilling has since been steadily prosecuted, the intention being to continue this work until the whole area has been explored.

At the company's big smelting works at Grand Forks, an important change made was in the method of disposal of the slag—from hauling it out to the dump molten in trains of slag-pots, to granulating and elevating, by belt-conveyors, to a height of 100 feet, thus forming a new dump on top of the old one. The new system has been successfully developed, and late in 1912 a second set of trestles and belt-conveyors was put in for use in case of interruption of that used throughout the year. The smooth and successful working of the company's blast furnace operations will be indicated by mention of the fact that all the eight furnaces were run continuously from June 5th to November 9th, a period of 156 days, this constituting a record run for the whole history at the works. Apart from this, there was very little interruption to the running of the furnaces or the converting plant at any time through the year.

The following excerpt from a descriptive article in the "Labor Saver," written by Mr. Colby M. Avery, manager mines and smelter department, Stephens-Adamson Manufacturing Co., Aurora, Illinois, U. S. A., will probably be of interest:

"At the smeltery of the Granby Consolidated Mining, Smelting and Power Co., Ltd., at Grand Forks, B. C., all slag until recently was disposed of by being transported in 6-ton slag pots drawn by dinky engines to a slag dump. This method of slag disposal had to be abandoned because all the available space for a dump had been taken up, and it was no longer possible to dispose of the slag in a molten condition because the highest level accessible to the cars had been reached. It was therefore decided to granulate the slag, ele-

vate it after having been dewatered, and build up the granulated material on the old dump.

"The slag is granulated by being discharged into a stream of water by which it is carried in a flume to a four-compartment bin where the slag is allowed to settle and the water is drained off. From suitably arranged gates the material in the various compartments is drawn out upon a 24-in. belt-conveyor which is supported by the trestle shown in the accompanying illustration and which leads up the incline to the horizontal conveyor operating on the high trestle shown in the centre of the picture. This trestle is supported on the original slag dump and is 120 ft. above it. An automatic tipper on this conveyor distributes the slag over the ground below on each side. The pile will be allowed to rise 120 ft. or to the level of the distributing conveyor framework will be moved sideways on skids to the edge of the pile. From this position the tripper will distribute the slag until the pile has again reached the limiting height. The conveyor will then be moved sideways a second time, and so on, and the pile will be advanced thus until the entire area shall be covered to a depth of 120 ft. The moving of this long conveyor will be effected by long skids and jackscrews fitted with levers and ratchets set at frequent intervals.

"The great height to which the slag has to be piled and the vast storage capacity that has to be provided called for conveyors of considerable length and of interesting design. The total length of the incline or No. 1 conveyor necessary to reach the elevation of 120 ft. is 645 ft. In order to reduce the strain on the belt this conveyor was made in two sections of about 324 ft. each with one section delivering upon the other midway up the incline.

"Under the present conditions No. 1 conveyor discharges directly to No. 3 conveyor, the horizontal conveyor on the elevated structure. When the pile reaches this conveyor, however, and it shall be necessary to move it sideways, No. 2 conveyor will be used. This conveyor telescopes beneath No. 1 conveyor and allows for lateral motion of No. 3 conveyor. As No. 3 is moved out, No. 2 will be moved up and outward so that when No. 3 has been moved to its final position, No. 2 conveyor will be horizontal, delivering from No. 1 to No. 3. The length of No. 2 conveyor is 500 ft. and of No. 3, 600 ft., which will be the limiting dimensions of the top of the pile when completed.

"The supporting framework of No. 3 conveyor is connected rigidly to that of the tail end of No. 2 conveyor, and in this connecting framework is supported the motor which drives the two conveyors and the chute which delivers from No. 2 to No. 3 conveyor. All conveyors in this system are driven from electric motors through geared drives; 24-in. special belts are used, equipped at the delivery ends with automatic brushes. This method of disposing of waste slag is said to be no more expensive than was the former method of dumping the molten slag from slag pots."

(Note by E. J.—My impression is is that the height of the slag pile is now greater than the 120-ft. limit proposed when the system was introduced. If I recollect aright, the incline has been carried 20 to 30 ft. higher than the former level of the horizontal conveyor, the trestle on which is now completely buried in slag, but as I did not make any notes when at the Granby works last November, I am not positive as to this. However, modifications and extensions of the original plan might easily have been found practicable and advantageous. As Mr. Avery's description was published early in last year, the system had not then been long in use).

In his report for the company's fiscal year ended June 30th, 1912, the superintendent of the smelter included the following information: "Average smelting cost for the year was \$1.256, as against \$1.172 for 1911 and \$1.187 for 1910." (Note.—Tonnage of ore smelted was: To June 30th, 1912, 739,519 tons; 1911, 984,346 tons; 1910, 1,183,642 tons.) "The last five months, leaving out the months when high-priced (Pennsylvania) coke was used, show fairly well, being \$1.20. The ores were more silicious this year than last, and slags were higher in silica. The copper loss was less than in any previous year. . . . Smelting and converting the last five months were \$1.264, being 0.024 cents less than 1911, and the lowest yearly costs the Granby Co. has ever made. Average cost of smelting and converting was \$1.34, and loss of copper in slags was 4.2 lbs." It should be remembered that labor troubles at the collieries caused a suspension of smelting for between four and five months in the latter part of 1911, so that several weeks of 1912 passed before conditions became normal.

British Columbia Copper Co.

The British Columbia Copper Co., Ltd., had an active and successful year's mining and smelting operations in 1912. No information has yet been made public as to the amount of net profit earned during the year, but the company paid two quarterly dividends—No. 4 on July 15 and No. 5 on October 15—of 15 cents a share on its 591,700 issued shares of \$5 par value, the total of each of these distributions of profit having been \$88,756.35. In December another quarterly dividend (No. 6) at the same rate, payable on January 15, 1913. The last-mentioned payment brought the total paid to date up to \$615,399.88.

The company's chief sources of ore supply during the year under review were the Motherlode mine, three miles west of Greenwood, and the Rawhide mine, distant from the smelting works about five miles in the opposite direction and in the vicinity of Phoenix. The latter is owned by the New Dominion Copper Co., but since the B. C. Copper Co. possesses a controlling interest in the New Dominion Co. and works its mines, the several properties are referred to as if owned by the same company.

Exact statistics of production in 1912 have not yet been received, so those that follow must be regarded as approximate, results of December operations having been estimated. The total material smelted at the company's smeltery at

Greenwood was 701,341 tons. Of this, 687,256 tons was ore from the company's various mines, as follows: Mother Lode, 384,190 tons; Wellington Group, 9864 tons; Emma, 4436 tons; Queen Victoria, 1066 tons (total from company's mines in British Columbia, 399,556 tons); Rawhide, 267,349 tons; Athelstan, 294 tons; Jack Pot Fraction, 897 tons (total from New Dominion Copper Co.'s mines, 268,540 tons); Lone Star and Washington, 1946 tons; Napoleon 17,214 tons (total from the company's mines in State of Washington, U. S. A., 19,160 tons); grand total 687,256 tons. Metals recovered were: Gold, 25,643 oz.; silver, 141,222 oz.; copper, 11,267,681 lb. The estimated production from ores from the United States included in the foregoing was: Gold, 2,442 oz.; silver, 22,110 oz.; copper 165,502 lb. To obtain quantities from British Columbia ores only, the latter must be deducted.

Mother Lode Mine—At this mine, from which more than 2,500,000 tons of ore has been extracted to date, the year's operations were practically nothing but ordinary mining. For the most part this consisted of drilling in advance of breaking down pillars and benches of ore, and this drilling was kept far in advance of ore-breaking requirements, preparatory to blasting with electric-fired charges. The method followed was to drill and load from 1,500 to 2,500 holes, averaging about 12 ft. in depth, connecting them up in groups of 25 to a group. All were provided with electric fuses, and fired simultaneously. Each of these blasts broke down many thousands of tons of ore, in some cases enough to last for shipping over several months. The average number of men employed at the mine the year through was between 100 and 110, working six days a week for about half the year, and seven days the other half. There were not any important additions to machinery, plant or buildings in 1912, the existing general equipment having been sufficient for all needs. The power plant was operated chiefly by electricity—the big hoist by compressed air and the compressor by electricity, with auxiliary steam when required.

Other Boundary District Properties—The Emma mine, in which the company holds a three-fourths interest, was worked only in January and February, for the power plant at this mine was badly damaged—almost destroyed—by fire on February 27th, since which date the mine has been idle.

The Wellington Group mines were worked until June, when they were closed and nothing more was done on them afterward. The company plans to do considerable exploratory work on this property next season.

Mines in Washington—The company owns two mines in the neighboring State of Washington, namely, the Lone Star and Napoleon.

The Lone Star is situated immediately south of the International Boundary, and is connected with the Canadian Pacific railway near Boundary Falls, three miles from the company's smelting works, by an aerial tramway five

and a half miles long. Notwithstanding that this tramway crosses three mountain summits, it has been operated successfully from the time a commencement was made to convey ore over it.

The Lone Star was worked only during a part of the year. Owing to its high silica contents it was eventually deemed inadvisable to endeavor to smelt the ore from this mine with that from the company's other mines. For some time past concentration tests have been carried out with the object of determining how best to eliminate the excess of silica. The ore presents somewhat unusual resistance to concentration, but notwithstanding this the problem is now in a fair way toward being successfully solved. There is in this mine a large quantity of ore available, so the results of endeavors to make it suitable for smelting will have an important bearing upon the question of ore-supply for the company's smelting works. In value the general tenor of the ore is higher than that of the average of Boundary district ores.

The Napoleon mine was worked practically all the year. The sulphide ore was sent to the smelting works at Greenwood, while the oxide was milled at the company's concentrating mill situated near the mine. The sulphide ore from the Napoleon is used at the smelting works, on account of its sulphur content, to regulate the grade of the copper matte. It is not, however, a barren flux, for it contains copper, gold, and silver in considerable quantity.

New Dominion Copper Co.'s Mines—The British Columbia Copper Co. holds a controlling interest in the New Dominion Copper Co., which owns several mines in Boundary district. The only one of those mines that was operated on a large scale last year was the Rawhide, situated near Phoenix. Work has continued all the year, and much development—new adits and raises, chiefly—has been done, beside which a large quantity of ore was mined and shipped to the company's smelting works at Greenwood.

Included in the new work was a branch of the lower tunnel, connecting with the ore-shipping bins. An electric haulage system was put in, to take the place of hauling with horses. The footage of development work done in 1912, including an estimate for November and December, is placed at 2656 ft.—some 2116 ft. of raises and drifts to October 31, and 540 ft. estimated for the two remaining months.

Voigt's Camp, Similkameen—Two groups of mineral claims, situated about ten miles south of Princeton, east of Similkameen river and along Wolf creek, were being developed by the company under option of purchase. The larger of these, known as Voigt's group, comprises 55 claims and fractions; the smaller known to the company's officials as the "upper camp," includes the Ada B. group and several individual claims, eight in all. Development work was commenced by the company on these properties in October, 1911, and was vigorously carried on until late in 1912.

A great deal of exploratory hand work was done on the Voigt group, and much diamond-drilling as well. Commencing with 16 men and two diamond drills, operations were enlarged until six drills were in use and upward of 60 men employed. In addition to doing about 1500 ft. of underground hand work—cross-cutting, drifting, and shaft-sinking—and many thousand feet of diamond-drilling, several thousand feet of surface trenching was done. As yet no information is available for publication relative to results of this work, for at the time of writing no statement has been made public as to whether or not the company will make the comparatively large payment on the bond that fell due in December. Judging by the statements of those who have for years been engaged in prospecting on the Voigt property, there are large showings of ore in various parts of this big group of claims, and it is hoped that the company will have found the ore deposits big enough and of sufficiently good average grade to warrant it in taking up its bond.

The "upper camp" adjoins the Voigt group on the south. The underground development work done consists of some 700 ft. of shaft-sinking, cross-cutting, and drifting, while fully 1500 ft. of diamond-drilling has also been done. On the surface, several thousand feet of trenching has been part of the exploratory work. There were in November, two drills being used, and the working force included, in all, about 30 men.

The ore met with in this camp varies, as a whole, from heavy hematite containing copper and iron sulphides with gold and silver, which ore is base, to ore containing a high percentage of silica with similar economic minerals. The geology of the camp has not yet been thoroughly worked out, but as a rule the tendency of mineralization is along fracture zones extending in a general direction from the southwest toward the northeast, the surface mineralization being extensive. Details concerning the ore bodies, however, are not yet made known.

The company erected in the lower camp numerous temporary buildings, while in the upper camp a substantial bunk and boarding-house has been built. The plant put in included one 80-h. p. steam boiler connected to two 3-drill compressors, half a dozen small boilers for operating diamond drills, small hoists, etc., and pumps, piping, tram rails and cars, and all other equipment requisite for doing the work that has for months been in hand. Part of the diamond-drill plant is owned by the company, and the remainder by contractors, the drilling being done by contract.

SIMILKAMEEN AND NICOLA

In Hedley camp, Similkameen, the Hedley Gold Mining Co. crushed 70,500 tons of ore and recovered gold valued at about \$750,000, of which more than half was net profit. Its dividend distributions in 1912 totalled \$260,000, or at the rate of 30 per cent. on its issued capital of \$1,200,000. It also added to its mining property the Windfall group at a stated cost of

\$150,000. A lengthy review of the Hedley Co.'s operations is printed elsewhere in this number of the B. C. Mining Exchange.

The British Columbia Copper Co. explored copper claims situated near Princeton, using six diamond drills beside doing much underground development. Coal mining in Similkameen district has already had mention.

An exhibit of silver-lead ore from the group of claims owned by the Treasure Mountain Silver-lead Company, made at the Spokane Hotel during the American Mining Congress week in Spokane, attracted much attention. This ore was from a group of claims situated about 20 miles from Otter Flat, a small town at the junction of Otter Creek with Tula-

In Nicola Valley district, there was no productive metalliferous mining. The progress made in coal-mining was satisfactory as regards developments, which were noted earlier in this review. Mining gypsum has been commenced in this district.

Little calling for notice occurred in connection with mining in districts through which flow the Thompson and Lower Fraser Rivers.

Bridge River, Lillooet.

Placer-mining for gold was carried on in several parts of the district but not very much was done in 1912. Operations have been chiefly confined to the upper Bridge River section, near Cadwallader Creek, at the mouth of which some individual placer-min-

ing the field-work season Mr. A. M. Bateman, of the Geological Survey of Canada, made a preliminary examination of the mineral resources of the Bridge River country.

IN THE COAST DISTRICT

In the lower Coast district by far the most important metalliferous mining operations were those of the Britannia Mining and Smelting Company. Next in importance, as having been productive mining, were those of the Tacoma Steel Company, on Texada island. Information relative to the development of zinc property, in Lynn Creek camp, across Burrard Inlet from Vancouver, was published in considerable detail in the B. C. Mining Exchange a few months ago. While pros-



Lower End of Electric Tramway, Nickel Plate Mine.

meen River, which group has been in course of development by a Spokane syndicate since November, 1911. The property is stated to be a most promising one, but at present is without transportation facilities suitable for sending out any considerable quantity of ore at a reasonable cost.

Another property in the same neighborhood was also represented by an ore exhibit, for in a store near the Hotel Spokane there was on display a good-sized heap of ore of excellent appearance. No information was obtained concerning the metal contents of the last-mentioned ore, but assay returns from that first-mentioned gave lead 60 to 70 per cent. and silver 128 to 168 oz. to the ton.

ing is usually done. Two hydraulic plants were formerly worked lower down the river, but no information has yet been obtained as to operations, if any, last summer. The chief quartz-mining was done on Cadwallader Creek, by the Coronation Mines, Ltd., a Victoria company, which did further development on the Bend d'Or and Countless group, opening some good-looking ore. Work was continued in the winter as well as in the fine weather season. The company reports having already broken down a considerable quantity of ore running better than \$50 to the ton in gold, and that the development of the lower levels is satisfactory. Other properties that have been worked are the Lorne, Pioneer and Wayside. Dur-

pecting has been done in many places, both on the mainland coast and neighboring islands, on the whole there was little substantial progress made last year in connection with this. However, that metalliferous mining in the lower Coast district made a decided forward move will be apparent when the results of the Britannia Co.'s work alone are taken into account, leaving out of consideration other advances made.

Britannia Mines and Concentrating Mill.

Much underground development work was done, many surface improvements were made, and production of copper ore was largely increased at the Britannia Co.'s property during 1912.

The great importance to the copper-mining industry, of the coast district in particular and the Province in general, of the Britannia Company's investigations and large-scale experiments, is not nearly so well recognized as it deserves to be. The extent to which the company has during recent years enlarged its production is shown in the following figures, giving the output of its mines for the last two years and, in the absence of similar information for several earlier years, production figures for the whole of the coast district show the coast metalliferous production to have been as follows: In 1908—Ore, 27,831 tons; silver, 29,598 oz.; copper, 1,506,464 lbs. In 1909—Ore, 39,557 tons; silver, 38,676 oz.; copper, 1,160,071 lbs. In 1910—Ore, 42,050 tons; silver, 47,104 oz.; copper, 3,073,090 lbs. In 1911, the Britannia mines alone produced 118,900 tons of ore, containing approximately 46,600 oz. of silver and 8,685,000 lb. of copper. In 1912 the corresponding quantities from these mines were: Ore, about 193,000 tons; silver, 76,500 oz.; copper, 14,300,000 lb.

Between 600 and 700 men have been continuously employed for some time past, and the extensive development and construction works in hand, and others to be undertaken as soon as can be done with advantage, assure employment for a similar number of men for some time to come. Outlining briefly what is being done, it may be mentioned that, while the mines are being developed and ore extracted on a larger scale than in past years, the work of driving a 5000-foot adit is also in progress, with 3000 ft. already driven and a daily advance of about 15 ft. being made. As this tunnel is being driven on a level 1200 ft. below the bottom of the deepest present mine-workings, it will, if ore be found to continue down to that depth, (which would give a total depth from the outcrop of the ore of fully 2200 ft.), make available for stoping an enormous quantity of ore.

Mine equipment on a commensurate scale, hydro-electric development of 5000 h. p., construction of railway from the mouth of the new adit-tunnel down to Britannia Beach, and other additional facilities for transportation, and the installation of a modern and effective system of ore-concentration, are included in the progressive programme adopted and being carried out with energy and expedition characteristic of the Britannia Co.

It is stated that the flotation process of Minerals Separation, Ltd., for the recovery of copper has been adopted, and that, preliminary to the erection of a new mill, the existing mill is being altered to meet immediate requirements. Some information concerning this process follows:

Concentration by Flotation.

Both "The Engineering and Mining Journal," New York, and "Mining and Scientific Press," San Francisco, recently quoted from the report of the annual meeting of Minerals Separation, Ltd., information relating to concentration by flotation. This indicates that the subject is regarded as being of much

importance in relation to the metallurgy of ores, and since this process is being substituted for that previously used by the Britannia Mining and Smelting Co., at Britannia Beach, it is probable the following notes will possess sufficient interest to local readers to warrant space being given to them. "Mining and Scientific Press" thus presents the case:

"At the annual meeting of the Minerals Separation, Ltd., it was stated that nearly 2,000,000 tons of zinc, lead and copper ores are being treated by the company's process yearly, while the following interesting comparisons with other concentrating processes were made by the chairman:

"In the up-to-date mines of the United States and elsewhere, where sev-



North Fork—Bridge River.

eral thousand tons of ore are treated daily, I understand the modern practice is to erect complete self-contained units, each designed and equipped to crush, and concentrate, or treat about 1000 tons per day. Complete plans of such 1000-ton units have been furnished to Mr. Broadbridge, the company's chief engineer, and on that he bases his figures, which have been summarized as follows: First, for an ordinary wet-table and vanner concentration unit to treat 1000 tons per day there are, in the particular mill referred to, 174 tables and vanners, occupying a building or floor space of 41,580 sq. ft. The power required to drive these amounts to 175 h. p., and the cost of installation is approximately \$120,000. This, of course, refers to the concentration-plant alone, no crushing nor power-plant being included. Second, to replace the mill by a Minerals Separation flotation plant will require only two units of 600 tons each, capable of handling 1200 tons of ore, instead of 1000, and will cost about \$20,000. The housing or floor space required will be less than 3000 sq. ft., compared with 41,000, and the horsepower to drive it only 80 to 120 at the most, according to the number of agitators. The additional cost of suitable regrinding mills recommended will, at the outside, amount to \$30,000; adding this to the cost of Minerals Separation flotation-plant, the total will then only amount to \$48,000, compared with \$120,000 for the former unwieldy and less efficient plant. The extra recrushing plant forms no part of the purely Minerals Separation process plant, although it is recommended and included, because of the enhanced profit it will ensure. To make this clear, take a two-per cent. copper ore, from which under the best table and vanner methods a possible 70-per cent. recovery may be assumed, so that with copper at 12 cents a pound the yearly yield will be \$1,226,400. Estimating an 85-per cent. recovery by Minerals Separation process, because all minerals can be freed from the gangue by better crushing, thereby making the higher recovery easily possible, and assuming on a conservative basis that fully 50 per cent. of the crushed ore will need recrushing at a cost of 20 cents a ton, and allowing also for the additional cost of smelting, the net results will work out as follows: With copper at 12 cents the yield will be \$1,459,109, showing a balance of \$232,709 to the good, which again, is equivalent to more than 60 cents per ton of ore net, or more than sufficient to amortize the whole of Minerals Separation plant, plus that of the extra fine-crushing plant in less than three months' operation. In other words, the copper produced from a two-per cent. ore will cost at least one cent a pound less to produce, the effect of which on the copper production of big mines, and of the world, will be self-evident.

"In a mill handling 2,000,000 tons a year, of which there are more than one in the United States and elsewhere, the two systems appear to be still more instructive and convincing. With wet, or table and vanner, concentration, a plant of this capacity would require 850 concentration tables and vanners, occupying a floor space of more than 200,

000 sq. ft., consuming not less than 870 h. p., and with a capital outlay of more than \$620,000. A Minerals Separation plant, on the other hand, to treat this quantity would only require nine units occupying a floor space not more than 15,000 sq. ft., would cost less than \$100,000, and would require only 400 to 450 h. p. If it were found necessary to fine-grind the ore, a sum of \$144,000 should be added to the above-mentioned amount, thus raising the cost to \$240,000. In capital outlay alone, the table and vanner plant would, therefore, cost 500 per cent. more than a Minerals Separation plant of equal capacity, or in excess of 150 per cent. more than a Minerals Separation plant, plus the recrushing plant recommended. The production of copper, assuming 85 per cent. recovery (in many cases we have reason to expect to get a recovery of 90 per cent.), would be increased from 51,000,000 lb. to more than 82,000,000 lb. The net saving would amount to \$1,163,547, taking copper at 12 cents a pound."

On Texada Island

Marble Bay Mine—The only metal mining worthy of note done on Texada island in 1912 appears to have been that of the Tacoma Steel Company at its Marble Bay mine, situated near Van Anda. The ore produced was less in both quantity and average valuable metal contents than in several previous years. This was owing to the necessity for doing more development work before the mining of first-class ore could be continued. Sinking No 2 shaft to the thirteenth level was completed, and at that level the depth of which is about 1100 ft. between 200 and 300 feet of driving was done. While this dead work was in progress it was not practicable to mine much high-grade ore, so meanwhile lower-grade ore that had been left in the upper levels was extracted and sent to the smeltery at Tacoma. The quantity shipped was 17,870 tons, containing about 2216 oz. of gold, 22,400 oz. of silver, and 1,031,009 lb. of copper. A new hoisting engine was installed, and new picking tables, ore bins and other conveniences put in, while the storage capacity of the ore bins at the waterfront was increased to 1000 tons.

Other Mines—The Copper Queen, Cornell and Little Billy are other copper-gold mines near Van Anda, but little mining was done at these last year. While much lime was shipped from the lime-kilns at the northern end of the island, there was no progress made toward utilizing the iron ores of the west coast of Texada.

The oil-fired furnace for smelting copper ores, with which demonstrations were made by Mr. Thos. Kiddie in 1911, was not operated commercially in 1912.

General Notes.

It is probable there are other mining properties that should have had some notice, but no information was received, and the task of asking every individual owner for particulars of his year's work and results is beyond the reasonable capacity of one writer. So it is that there are, of necessity, omissions. As a case in point, there was mining in pro-

gress on Princess Royal island, but in the absence of particulars of the work done, and results at the Surf Inlet Gold Mines Company's claims on that island, there is little that can be written concerning them. Quite recently telegraphed advice was received to the effect that a large and important ore body had been encountered, but no details have been received by the writer.

Coal Mining on Vancouver Island.

The approximate production of the Vancouver Island coal mines in 1912 was as follows: From the Canadian Collieries¹ (Dunsmuir) Ltd., 662,000 tons; those of the Western Fuel Company, 549,000 tons; of the Pacific Coast Coal Mines, Ltd., 167,000 tons and of the Vancouver-Nanaimo Coal Mining Co., 87,000. Other information concerning these mines has already been given so little need be added. It may be observed, though that the demand for Vancouver island coal continues to be in excess of the supply for coal-bunkering had to be done elsewhere by a number of overseas vessels during the three months of the year that production at the mines of the Canadian Collieries (Dunsmuir) Limited, was hindered by labor difficulties.

Gold Bullion Receipts.

The following table shows the gold (quantities and value) received at the Dominion of Canada Assay Office, Vancouver, the calendar years 1911 and 1912, respectively:

In 1911—	Oz.	Troy Net Val.
From British Columbia..	31,523	\$525,746
From Yukon Territory..	2,021	34,994
From Alaska	5,525	86,676

Totals 39,069 \$647,416

In 1912—	Oz.	Troy Net Val.
From British Columbia..	49,553	\$829,766
From Yukon Territory..	2,413	39,797
From Alaska	7,264	115,411

Totals 59,230 \$984,974

The increase for 1912 as compared with 1911 was—in quantity, 20,161 oz., and in value, \$337,558.

Profits Earned in 1912.

The net profits earned in 1912 by companies operating metalliferous mines in British Columbia are estimated to have been not less than \$2,000,000. Dividend distributions were as under:

	Total 1912.	Rate per Annum.
British Columbia Copper Co., Ltd....	\$ 177,512.70	6 p.c.
Consolidated Mining and Smelting Co..	232,208.00	4 p.c.
Hedley Gold Mining Co.	360,000.00	30 p.c.
Le Roi No. 2 Ltd....	29,400.00	1 p.c.
Standard Silver-Lead Mining Co. Ltd. ...	425,000.00	2 1/2 p.c.

Total for year ... \$1,224,120.70
B.C. Copper Co's dividend declared in Dec. payable Jan. 15, 1913 88,750.35
Granby Consolidated Co.'s profits, approx. 1,500,000.00
\$2,812,871.05

The president of the Granby Company stated at annual meeting that the profits of the company for the first half of the year had been nearly \$600,000. In the second half, the company announced that profits had been about \$140,000 a month. As it was generally understood that for November and December profits were higher, it seems fair to place Granby Co.'s net earnings for the calendar year at \$1,500,000. Then there were known net earnings of other companies above their dividend distributions, so that the net profits of metalliferous mining companies for 1912 were probably \$3,500,000, in addition to which one or two of the coal mining companies also made profits.

In Conclusion.

While it is not practicable to do justice to the mining industry of British Columbia in a summary such as the foregoing, it is believed that most of the essential features indicating substantial progress have been brought out.

Shortly, in conclusion, it may, with full confidence that there is abundant warrant for doing so, be claimed, that never before was the mining industry in a more satisfactory condition generally than at the present time. This is not stating that full advantage has been, or is being taken of the great opportunities for profitable utilization of the enormous mineral resources of British Columbia, for most decidedly such is not the case, but it is giving a positive expression of opinion that mining as an industry—one of the most important of the province—certainly "made good" in 1912. And one of the most satisfactory aspects of the situation is that the older lode-mining districts—Slocan, Rossland and Boundary—were the dividend-payers, and this, too, after a comparatively long period of continuous production. On the other hand, there is ample reason for gratification that while a number of the lode-mines of Kootenay and Boundary districts give promise of continuing to be productive, and others may reasonably be regarded as prospective producers, the outlook for mining in the extensive Coast district was never before so good as at present.

It will come as a surprise to many to be told that the total annual value of the mineral production of the coast district has nearly doubled in five years, yet such is the position. For 1907 the total value of products—metalliferous minerals, coal and coke, and structural materials—was \$6,147,000; for 1912 it is estimated at between \$11,500,000 and \$12,000,000, with the increase in 1912 over 1911 estimated at more than \$1,000,000. And, having in mind the considerable expansion in production being prepared for by the Britannia Company, the preparation for a big output by the Granby Company, the opening of new coal mines on Vancouver Island, and the near approach of an output of ore from Skeena River district, not to say anything of the great increase that may be expected in the use of building and other construction materials included in non-metallic minerals, it does not seem unreasonable

to claim that the near future is big with promise for the mining industry of the Coast district as well as for the interior mining districts.

UNIT COSTS AT BRITISH COLUMBIA COPPER CO.'S MINE.

(From Engineering and Mining Journal, New York.)

The Mother Lode group, belonging to The British Columbia Copper Co., Ltd., is situated at Greenwood, B. C., in what is known as the Deadwood camp. The ore occurs in contact deposits between limestone and eruptive dikes. According to data furnished by Mr. R. H. Eggleston, secretary, the rock mined at the Mother Lode mine is an altered limestone or limestone replaced by actinolite, garnet, epidote, magnetite, and metallic sulphides. During the period from April 1 to September 30, 1912, or 166 working days, 184,644 tons of ore was mined, or an average of 1112 tons per day, all of which was produced from stopes. The average hoisting depth was, approximately 375 ft. All stoping is done by the chamber and hollow-pillar system. The labor is of mixed nationalities, but may be said to consist of good Western American laborers. Altogether 109 men worked per day during the period mentioned; of these 57 were employed in the stopes and 17 in miscellaneous underground work, a total of 74 underground; the remaining 35 were employed on surface at the mine. A list giving the various occupations of the men employed was furnished, and is given herewith:

Underground.	
Foreman	1
Machine men, piston	23
Machine men, hammer	13
Timbermen	3
Blasters	2
Powderman	1
Motormen	6
Chutemen	12
Barman	1
Nipper	1
Pipe and track	1
Skip loaders	4
Cage tenders	2
Shift bosses	4
Total	74
Surface.	
Superintendent	1
Master-mechanic	1
Skip hoistmen	2
Cage hoistmen	2
Compressor engineers	3
Blacksmiths	4
Machinists	2
Carpenter	1
Crusher and conveyor	4
Railway car loader	1
Electrician	1
Watchman	1
Barn boss	1
General surface	1
Office and warehouse	2
Boarding house	5
Total	35

According to these figures, about 11 tons are secured per working day per

man employed, not including employees in boarding house. The rate of production per underground employee is about 15 tons per day. The average daily production per man engaged in breaking ore is about 30.9 tons, and per man stoping 19.5 tons, while apparently 61.5 tons are taken out per day per man in tramming ore. It will be noticed that no labor is needed to move ore to chutes and that only one timberman is employed for every 37.1 tons of ore mined per day. The ratio of other employees to daily production may be obtained by referring to the list showing the various occupations, the daily production being 1112 tons, as mentioned. During this period 40,250 bd. ft. of timber was used in stopes, or about 0.217 bd. ft. per ton of ore extracted. General repairs and surface work consumed about 0.065 bd. ft. per ton of ore. Dynamite consumption was equal to 0.67 lb. per ton.

All main drifts and stations are lighted by electricity and the candle consumption is at the rate of five per man per eight-hour shift. A total of 1560 machine-drill outfits, with 3 1-4 drills, was worked during this period, which indicates about 118 tons per drill-shift. Using a Sullivan 3 1-4-in., U. F. 2 drill, an average of 31 ft. of holes is drilled per drill-shift. The consumption of lubricating oil on drills is about 0.75 pint per shift.

Tramming is done both by horses and electric locomotives; it is estimated that one man loading from a chute into a 2.15-ton car and moving the ore 450 ft. will handle from 31 to 32 cars in an eight-shift, which is equivalent to about 8.4 tons per man-hour.

CONSOLIDATED COMPANY'S NEW ASSAY OFFICE

The "Rossland Miner" of the 4th inst says:—

The new assay office of the Centre Star has been in use for a few days, and it is considerably larger and has more accommodation than the old one. It is a story and half structure, and has five good-sized rooms on the ground floor, besides storage rooms on the second floor. At present, owing to the increased number of assays made necessary by the experimental concentrating plant, the staff of assays and analytical chemists is larger than usual including George Dunn and a staff of five.

An improvement that will be put into use in a day or two is the use of crude oil instead of coal for fuel in the assay furnaces. Above the assay office there has been installed a tank with a capacity of 60,000 gallons. This is connected with the furnaces by a gravity pipe. The oil is brought here in tank cars and is unloaded from them by a pipe that runs from the high line track of the C. P. R. to the tank. It is claimed that oil fuel will be cheaper and more efficient in the assay furnaces than the coal and coke which have so long been used for assay work.

At Laurier work has been resumed on the Laurier mine. W. A. Pfeifer has charge of the work.

HEDLEY GOLD MINING COMPANY'S OPERATIONS IN 1912

Review of Year's Work

Former Record Broken All Along the
Line—The Pleasing Story of In-
creasing Efficiency—Future
Has Big Things in Store

The following review was printed in
the "Hedley Gazette" of January 2:—

Another Christmas season in Hedley
has been brightened by the brighter out-
look of the leading industry upon which

The difference lay in the fact that they
30 per cent. in dividends for the year
that has just closed and the owners
are moreover free to admit that the
outlook of their mines in this camp
based upon actual development, now
did not know it to be so and that the
faith of those who were expected to
know and who should have known more
than they did, was weak.

As might be expected from the fact
that the dividends have been greater
during the past year than any previous
year, 1912 has been a year of smashing
records and all former achievements
have had to take second place. The
tonnage of ore mined and milled has
been greater; the bullion produced has

Mine Development

On the Nickel Plate the development
work consisted of 400 ft. of sinking
of an incline shaft, with four levels,
opened out from it and 300 ft. of drift-
ing on them. This incline is known
as No. 5 incline from No. 4 tunnel.
There was also an incline raise here
to connect No. 4 tunnel with the work-
ings above.

Another important feature connected
with the development from the under-
ground workings of the Nickel Plate was
the commencement made on what is
known as the Dickson incline. This
will be a very important undertaking
and will play a very prominent part



Distant View of Mill and Inclined Tram way, Nickel Plate Mine.

the town subsists; and when that in-
dustry has just completed payment of
far exceeds that at any period in the
Nickel Plate's history, the feeling of
supreme satisfaction which it imparts
makes the work of reviewing the year's
operations a very pleasant task.

It will not be necessary to remind
our readers that in the 14 years' history
of the mine, of which only about eight
and a half years covered the producing
period, the Christmas season did not
always find the situation affording the
same sense of buoyancy and content-
ment. Yet the mine was really richer
than it is now by the amount of value
which has been extracted since then.

been greater; the mill has accomplished
a higher duty per stamp; the extrac-
tion has been higher; and, more im-
portant than all of them, the develop-
ment done during the year has shown
up foot for foot a vastly greater amount
of ore than ever before, with the re-
sult that the ore reserves have reached
a point which puts the whole concern
on easy street for years to come, so far
as the necessity for looking for new
orebodies is concerned. No wonder the
ore reserves have increased so enor-
mously during the year, when it is
known that every bit of the develop-
ment done in the Nickel Plate during
the year has been all in ore.

in the future working of the mine.
The incline is planned for 3000 ft., and
is pointed in the direction best calculat-
ed to serve in the mining of the large
ore reserves already known to exist and
when carried on will pierce the terri-
tory where it is known that new ore-
bodies will be opened. The incline is
to be double-compartment with man-
way. The work already done is that
of cutting the station for it and pro-
viding ore-pockets. The present in-
tention is to equip for sinking the in-
cline to 1000 ft. and a hoist capable of
doing so will be installed at once. As
before stated, every part of this de-
velopment work on the Nickel Plate

underground workings has been in ore.

Other development work has been the 140-ft. tunnel under the bunkhouse into the Silver Plate property, and sinking 150 ft. in the Sunnyside No. 4 incline, but as the power which could be spared for development was limited and there was a disposition to concentrate as much as possible on the Nickel Plate itself, the Sunnysides and other workings did not receive the attention they would otherwise have got.

Exploration by diamond-drill was prosecuted extensively during the year and a total of 3447 ft. was drilled, of which 2066 ft. was by contractors' drills and 1381 by the company's own drills.

The Windfall Purchase.

As a part of the development may also be mentioned the exploratory work done in connection with the purchase of the Windfall group of claims, consisting of the Windfall, Morning, Bighorn, Winchester, Fraction and Czar Fractional mineral claims, on which the company took a bond from the owners in the early part of the summer and began diamond-drilling. This drilling was not done on the properties under bond but on the company's own property in unexplored ground lying between the Nickel Plate workings and the group bonded, and within a few feet from the Windfall line. The bond was for a long term and the consideration was \$150,000, but it was taken up at the end of four months and the full consideration paid less the discount for cash before completion as provided for in the bond. The spot where the last drilling was done was very precipitous which rendered the work a trifle hazardous after the snow came on, as it does very early at that point. Beside, the hard frost at nights was freezing the water in the pipes and causing considerable delay and lost time. The company have provided themselves with drilling equipment capable of going the depth necessary to reach the ore-bearing strata at that point, and doubtless as soon as the weather is fit in the spring they will resume the drilling and put down a few more holes to obtain further information than that upon which the bond was taken up.

The Ore Tonnage.

There was mined and milled during the year a little over 70,000 tons, which is nearly 13,000 tons more than last year, while last year was about 10,000 tons more than the year preceding. The tonnage month by month was as follows—:

	Tons	Assay value
January	5701	\$10.70
February	5014	9.49
March	6263	11.60
April	5326	10.55
May	5636	10.64
June	6027	10.13
July	6110	9.97
August	5900	12.11
September	6108	16.38
October	6101	11.69
November	6003	11.57
December	6050 (estimated)	

This will show the value of the ore mined and treated during the year to have been at least \$792,000 and as the bullion output to the end of 1911 was as we have shown in former issues to have been \$3,810,709.62 it may now be seen that the output to the end of 1912 is a little better than \$4,600,000 for the average assay value of the ore for 1912 was \$11.32, and as the extraction for 1911 was over 92 per cent. and for 1912 has gone up to 94 per cent. the assay value and the bullion recovery are very nearly the same.

Milling Operations.

It will be remembered that prior to the time the present company took hold of the Nickel Plate the highest record of ore mined and milled in any one year was 44,068 tons in 1908. The first full year the present company operated was 1910 when they increased the tonnage to 46,828 tons. During that year important changes were made in the mill to cut out the losses that were constantly occurring up to that time but no increase was made to the number of stamps. These changes were not fully completed and in operation until a month or two of 1911 had gone past, but nevertheless the tonnage for 1911 went up 10,590 tons over 1910. The tonnage for December 1912 is not available at the hour of going to press but we are safe in saying the tonnage for the year is likely to beat that of 1911 by nearly 13,000 tons. Why this should be when there has been practically no new equipment installed and in operation during the year over what was in operation in 1911 may seem strange. It is, however, to be accounted for not to any one or two great changes but to a number of smaller improvements here and there through the mill, made by individual mill hands in the working of the machines under their charge and it shows that initiative on the part of individual operatives is a good thing to encourage. The great gain in the tonnage of the winter months of 1912 over the same months of former years is easily to be accounted for in the change of the water system by which the water was used over and over again. This not only meant that less water was required to do the same work but it ensured a more equable temperature in the water and better work on the vanners and other concentrating machines which were hampered in their work by having to use icy water direct from the penstock that was sometimes half water and half anchor ice. Two other things which have no doubt contributed to the duty per stamp so far as the batteries are concerned, are the magnet on the conveyors which has been the means of saving stamp stems from breakage, and the increase in the drop of the stamps and use of coarser screens. This last of course threw a heavier duty upon the tube mill in having tailings to re-grind, but it showed that the tube mill heretofore was not working up to its fullest capacity.

New Equipments

The only additions to equipment during the year of any marked importance

were the changing of the headgear on the gravity tramway at central station and the installation of another new 150 h.p. boiler in the power house.

The headgear at the central station has always been a source of trouble and has caused many delays through the breaking of the shaft in the two wheel gear formerly in use. The uneven wear on the cable and the drum created a differential strain which grew worse as the wear proceeded, until finally the snapping point was reached at irregular intervals. Some three years ago the general superintendent, Mr. G. P. Jones, who is of a mechanical turn of mind, devised a plan to use three-wheel gear but it was not put in owing to the expense attached in casting the new wheels required. Lately he modified it using the same principle but making provision for utilizing the two wheels that have always been in use and necessitating the making of only one additional wheel. It has now been working about a couple of months or more and is giving every satisfaction. There is better control of the skips and the strain on the shaft is reduced from 84 tons to 28 tons. Mr. Jones is confident that the breaking of the shaft is now a thing of the past, and the tramway which in the past was a fertile source of trouble will become one of the best behaved parts of the plant.

Another tramway improvement was the installation of a direct-connected hoist at the tippie which will enable them to handle freight cars loaded at the mill and send them right through to the mine without reloading or re-handling.

The Power House.

The only thing new in this part of the plant is the installation of a new 150 h.p. boiler, which has now been in commission a little more than a week and is proving a fine steamer. Its installation enables them to close off one of the other boilers at any time for repairs and it is being made use of in this way at the present time to permit of the others receiving an overhauling, which it is found they were all in need of. When all have been overhauled and the full battery is put on the power should be very much steadier and the lack of necessity for forced steaming will mean greater economy in fuel. A new plan is also adopted with the disposal of the ash and clinker. Formerly it was wheeled out and dumped on a slag heap but now a stream from the tail-race strikes it and carries it off granulated to the creek.

The Power Question

Last year in the annual review for 1911 we made mention of the digging of 7000 ft. of ditch to conserve a large volume of surface water which would otherwise run off in the spring. In speaking of it we made mention that it was estimated it would increase the annual water supply of Twenty-Mile Lake 40 per cent., but last spring it did much better than that and the increase was found to have been fully

60 per cent. Unfortunately the dam developed a weakness and allowed much of the water to escape. Repairs of a more permanent nature were made to the dam, part of which was the laying of a large steel pipe in concrete extending out into the lake as the collapse of the former wooden structure precipitated the break. Last year for the first time in many years the pumping of water at the lake was dispensed with, and if everything goes well with the dam next spring and summer and the muskrats will behave themselves next summer should see a strong volume of water conserved that will supply the big Doble water wheel in the power house well into the Fall months and save a large fuel bill.

The Bigger Power Question

While Twenty-Mile creek and Twenty-Mile lake have always loomed large in Hedley's power schemes, it has been known that there was a much greater one in reserve and that the day would come when the waters of the Similkameen river would be harnessed to not only supply the deficiency but to assume the whole load and allow Twenty-Mile to take a rest. The wonder was that it was not taken hold of long before, but now when it has become active it has become very much so. Not until a few months ago was any definite move made by the company to secure rights on the river, but unfortunately when they did move they found they had delayed too long and that the situation was complicated by a prior right which had been granted for a volume of water that was practically the entire volume which the river was capable of supplying at low water.

Of course it is still open for the company to go further up the river and develop power, returning the water to the stream at a point above where the prior right could divert it, but that means greater inconvenience and greater cost. What they most complain of now is the fact that delay is occasioned and they want to begin immediately the installation of a plant which will develop 2000 h.p. This they cannot do until the holders of the prior right file their plans and show where they propose diverting the water. The water rights branch of the Department of Lands has told them that extension of time has been given the holders of the prior right as provided in the Water Act, and the Commissioner, like the laws of the Medes cannot change what he has already done.

The whole question of the development of Similkameen power is one which had been discussed at length in these columns long before the present situation arose and it would neither be in place nor within the scope of a review of this kind to go into it further just here, although we may have occasion to again discuss it in future issues as well as keep our readers posted from time to time with what is being done.

Coal is being shipped from Princeton to Vancouver,

EAST KOOTENAY ORE EXHIBIT

Commenting in the current issue of the "Cranbrook Herald" on the recent exhibit of East Kootenay ores that were on view during the Chicago Land show, Joseph Ryan of Cranbrook, who was primarily responsible for the scheme,

"To sum up what was effected by the mineral exhibit at Chicago it can be said that Cranbrook was proven to be the centre of an area embracing the St. Eugene, Aurora and Society Girl at Moyle, the Sullivan, North Star and Steward at Kimberley, the Evans group, Dominion Consolidated, Hodson's group, and the Big Copper on the St. Mary's River, the Kootenay King, Tiger-Poorman, Empire and Eagle and Plume group at Fort Steele, the War Eagle on Skookumchuck, the different claims belonging to Michael Shira on Lewis and Tracey creeks, the great deposits of hematite iron ore on Bull River with many others, all within practically a radius of 20 miles from Cranbrook. As a proof of the belief which the authorities at Victoria have in the efficacy of the mineral exhibit to attract the attention of the public to the resources and opportunities of the province, it may be said, finally, that the government is now perfecting arrangements for the collection and exhibition of a collection of ores to embrace the entire province of British Columbia. It is probable that this collection will be shown at the great Panama Exhibition at San Francisco in 1915."

GRANBY CONSOLIDATED RESUMES DIVIDENDS

The "Phoenix Pioneer" of the 25th inst. says:—

The most important event in local mining circles in recent months is the resumption of dividend payments by the Granby Smelting Company, announcement having been received in Spokane early this week that the directors had declared a disbursement of 1 1-2 per cent. on the issued capitalization of 1,500,000 shares at \$100 a share which makes the amount of the dividend \$225,000, to be distributed at once among the stockholders of record on January 17.

The last dividend payment prior to this was December 30, 1910, to which time the total amount distributed was \$4,049,630, and the distribution of the new dividend will make the aggregate payments to date \$4,273,630. It is believed by local stockholders in the company that the payments will be continued permanently, with promising possibilities of a material increase in the dividend rate in a short time.

It is believed also that the resumption of distribution of a part of the earnings of Granby will not necessitate outside assistance in financing the completion of the smelter at Granby bay and the further development of the mines at Hidden Creek, but to guard against the possibility of conditions arising that will compel the enlistment of additional capital the directors have called a meeting early in February to

arrange for a bond issue and to insure its flotation in an emergency.

Granby's treasury is said to contain at present approximately \$1,500,000 and the monthly earnings are averaging about \$150,000. Construction of the Granby bay smelter is nearing completion rapidly and the plant will be ready to commence operations between May 15 and June 1, provided there are no unforeseen delays. Development at Hidden Creek has already progressed to a point that insures ore for a number of months in advance of the smelter's needs, and apparently the possibilities are remote for the need arising for more capital than the company now has available.

HAZELTON CAMPS FIRST ORE SHIPMENT

The "Omineca Miner" of the 25th inst. says:—

The office statistics for Omineca mining division for the year 1912, as compiled by Mining Recorder Kirby, show splendid progress in the mining industry. In the table which follows the figures for 1912 (which do not include returns from one or two of the sub-offices) are compared with those of the previous three years.

	1909	1910	1911	1912
Free Miners' Certificates	521	865	1017	1023
Mineral Claims Recorded	260	690	593	649
Certificates of Work Agreements and Transfers	69	194	195	198
Placer Mining Leases	10	20	18	38
	1909	1910	1911	1912
Mining Receipts	\$9,028.	\$11,217.	\$12,714.	\$14,371.

As compared with the last available statistics from the other mining divisions of the province, Omineca district is surpassed in receipts only by the New Westminster division, which includes the City of Vancouver, and which last year had a record of 2826 free miners' certificates. The older districts of Nelson and Portland Canal were the only ones to exceed the record of assessment work made by the miners of this district. No other district equalled Omineca last year in the number of claims recorded.

The first shipment of Hazelton ore is now on its way to Trail smelter, the Harris mines sending 25 tons out on Wednesday. The Silver Standard is preparing for a shipment of ten cars, loading of which will be completed in a few days. The ore from these properties is high grade galena and gray copper, well above the pay limit, as demonstrated by analyses made by the smelter people.

James Breen, who built the smelters at Trail and Northport, is running hotels in Helena, Spokane, Portland and other cities. He is still interested in some Boundary mines.

Daily passenger trains are running on the Grand Trunk Pacific from Winnipeg to Tete Jaune Cache, a distance of 1095 miles.

DECEMBER REPORT OF VAN ROI MINE.

Following is the manager's report on the Van Roi for December:

Mill report for month of December—Total amount crushed, 3,334 tons (average assay 8.9 ozs. silver, 2.5 per cent. lead, 5.0 per cent. zinc), yielding 106 tons lead concentrates, assaying 129.9 ozs. silver, 56.5 per cent. lead, 14.3 per cent. zinc; and 124 tons zinc concentrates, assaying 42.0 silver, 3.7 per cent. lead and 44.0 per cent. zinc. Mill ran 596 hours.

Total approximate value, \$12,557.

Estimated expenditure for corresponding period: Development, \$2,195; ore production, \$11,796; milling \$3,200; total \$17,191.

Capital expenditure \$203.

Westward drift level 9—Breast is 1453 feet west of portal. Advance 118 feet driven. Promising.

Westward drift, level 9—Breast is 1,338 feet west of portal. Advance 74 feet driven. Promising.

Drift eastward—35 feet up.

No. 3 intermediate raise above level 2—Advance 32 feet of which 25 feet averaged 20 ozs. silver, 4 per cent. lead 5 per cent. zinc, across 6 feet.

DECEMBER REPORT OF LE ROI NO. TWO.

Following is the manager's report of the Le Roi No. 2 for December:

Josie mine report for December—Shipped 2,100 tons of ore and 139 tons of concentrates. The receipts from the smelter are \$11,086, being payment for 1,207 tons ore shipped, and \$2,458, being payment for 140 tons concentrates shipped. In all \$13,546.

Estimated costs for corresponding period: Development, \$8,000; ore production, \$11,000; milling, \$1,600; total, \$20,600.

No. 38 Drift (North Annie Vefn), 300 foot level—Advance 44 feet, of which 25 feet averaged 17 dwts. gold, 2 7-8 per cent. copper, over 4 inches.

N. 9 Hanging Wall Raise—500 foot level—Advance 14 feet, of which 14 feet averaged 3 dwts. gold and 1 1-2 per cent. copper over 6 inches.

Annie Drift, 600 foot level—Advance 41 feet, of which 5 feet averaged 4 dwts. gold and 4 3-4 per cent. copper, over 3 inches.

East Poorman Drift, 700 foot level—Advance 132 feet, of which 90 feet averaged 1 oz. 2 dwts. gold and 1 1-2 per cent. copper over 1 foot 10 inches.

OUR DIVIDEND PAYING MINES

The "Mining and Scientific Press" has the following:

Mining companies in British Columbia have had an unusually prosperous year, having declared in dividends during 1912 a total of \$1,312,876. The Hedley Gold Mining Company leads with a declaration of \$360,000, or at the rate of 30 per cent., while the Standard Silver Lead Mining Company with \$425,

000, exceeds in amount but not in rate, having paid 21 1-4 per cent. The British Columbia Copper Company has paid \$177,512 and declared an additional dividend of \$88,756, payable early this month, while Le Roi No. 2, Limited, has paid \$29,400 or at the rate of one shilling per share. The gratifying total of dividends would have been considerably larger under normal circumstances for the Granby Consolidated Mining, Smelting & Power Company, Ltd., made large operating profits during the year that were retained to finance the construction of the new plant at Hidden Creek.

ONE BROOKS AND CAMP HEDLEY

A certain person named Brooks has been doing some advertising in the Coast papers regarding mineral properties at Camp Hedley. While the B. C. Mining Exchange is no believer in the policy of the so-called "reform" newspapers, whose "wild-cat exposures" are generally based upon an unsuccessful attempt to blackmail advertising patronage out of the persons or companies they so virtuously denounce, still, there are limits to everything and the Brooks person seems to have over-stepped them. The energetic "Hedley Gazette," which is always vigilant in the interests of its fine camp is in a good position to speak with authority upon the statements of Brooks, and we reproduce with pleasure the "Gazette's" remarks in its issue of the 23rd inst.:

Last week the "Gazette" published a letter by Charles H. Brooks as an example of the lengths to which gall will carry a man. Since then the public and particularly the people of Hedley who are in a better position to judge of the situation than any others, have had further evidence in the full page advertisements which have been appearing in Vancouver papers. To remain silent and take no notice of the circumstance might reasonably subject us to the charge of sharing responsibility for the imposition.

In view of the information sent us from New York to which reference was made in last issue, we are more than amazed that the man should have the nerve to work this stunt on the people of British Columbia, knowing as he does that so much of him and his present relations to the camp are fully understood here.

Regarding the subject matter of the stuff he has given out in his Vancouver ads. there can be no two opinions here. The grossest misrepresentations have been indulged in and in almost every paragraph the carefully-concealed falsehood is only too apparent to everyone acquainted with the facts. To take these up seriatim by way of analyzing and pointing out the distortions and the clever way in which they are made to convey conclusions that he really has not stated, would take up more space than we have at our disposal.

If any think that in this repudiation we are knocking the camp they are welcome to that opinion. The "Gazette" has always maintained that the truth

is all that Camp Hedley needs and in this case we hold that it is too bad that as good a property as the Golden Zone should be made ridiculous in the eyes of mining men, for that is the only effect that such advertising can have. The statements as so baldly and brazenly ridiculous that the experienced mining man will spot the imposition at first glance and it is only the green-horns and servant girls who would be at all likely to be taken in by it. Long before Brooks saw the claims columns of matter descriptive of the property and its prospects and possibilities were published by the "Gazette," and yet the man had the cheek in his letter published last week to say that we did not know anything about the proposition. He poses as an experienced miner but the people here know him in no such connection and any evidence they have had on that score would point to quite the opposite.

A COMPARISON

Alaska is always very much in the limelight as a great producer of minerals, and so it ought to be, says the "Victoria Colonist" of the 8th inst. It is not in derogation of the great Northland, but only to show our own Province in the right light that we make the following comparison:

	British Columbia	Alaska.
Gold	\$ 5,460,000	\$16,853,256
Copper	8,388,500	4,630,000
Silver	1,676,200	300,000
Lead	1,520,000	.....
Zinc	501,500	.....
Coal and Coke	10,879,000	260,000*
	\$32,606,000	\$21,850,000

*In the Alaska returns coal, coke, petroleum and all other minerals are included in this amount.

From these returns it will be seen that excluding coal and coke from both returns the British Columbia output of minerals for the year is in advance of that of Alaska. It is interesting to note that while 76 per cent of the Alaska output was of gold, less than 17 per cent of the British Columbia output was of that metal.

In this connection it may be mentioned that the mineral output of the Yukon Territory last year was about \$8,000,000. We therefore reach the following result, in round numbers, of the mineral output of the Pacific Northwest north of the 49th parallel:

British Columbia	\$32,000,000
Yukon	8,000,000
Alaska	21,000,000
Total	\$61,000,000

This is a splendid showing for the year, and especially as it is from a part of the country which, within the memory of men now living, was regarded as one of the waste places of the earth. "We know," said a United States Senator discussing the purchase of Alaska, "that north of the Straits of Juan de Fuca all is darkness and desolation." It is mighty satisfactory to know that, splendid as is this showing, there is good ground for believing that it is only a beginning of what is to be.

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Vancouver, B. C., January, 1913.

EDITORIAL.

In the present issue continuation is made of the Annual Review published in our December number, further and additional particulars being given which were not available earlier. Much favorable comment on the satisfactory conditions of the mining industry in this province, as outlined in the Annual Review, has been received by us since its publication, and there is every indication that the splendid figures reached by the year's total production have attracted the interest of capital. While we are not at liberty to quote names we have been assured by persons who stand deservedly high among those who are interested in mining all over this continent, that the mining industry of British Columbia is on the eve of a period of great activity—in fact, that most desirable thing a legitimate "boom" based upon genuine production. It is not surprising that this should be the case. In any of the States of the great Union to the south of us, so remarkable a record of progress within its borders as that which was published in our December issue would have created a movement in mining and investment circles of the most sensational kind. There is little cause for wonder, then, though much for satisfac-

tion, that leading financiers in the great monetary centres of the United States are turning their attention to the mineral wealth of this province to a degree which has never been known before.

It would be the height of injustice, in recording so highly satisfactory a condition in mining affairs to ignore the leading parts taken, and the beneficial influence exercised, towards this result by the Provincial Department of Mines. To Sir Richard McBride, premier of British Columbia, and holder of the portfolio of Minister of Mines in the Provincial Cabinet, and to his efficient coadjutor, Mr. R. F. Tolmie, Deputy Minister of Mines, the utmost credit is due for the capable manner in which they have administered the affairs of the chief industry of this province. It is no light matter to keep the wheels of a great and growing industry, in a province of so large an area and so scanty a population, running with so little friction and to so good purpose. The steady record of advancement in mining development and mineral production, and the fact that the mining regulations and administrative methods of British Columbia have been deemed worthy of being adopted as a model by older and more populous sections of the British Empire, is the highest testimony which could be desired as to the excellent and capable hands in which the control of the Provincial Department of Mines is vested.

The report of the manager of the Portland Canal Mining Co., Ltd., which appears in another column of this issue, makes very interesting and encouraging reading. The progress which is being made by the management of the Portland Canal Tunnels, Ltd., under the capable supervision of Mr. W. J. Elmendorf, in the driving of the long tunnel, is ample evidence that the completion of this important enterprise, which means so much to the camp, is in a fair way to be achieved even earlier than its promoters had anticipated. Other reports which we are able to give show that a very active and prosperous season throughout the Portland Canal district may be looked for during the coming twelve months.

In spite of an unusually heavy snowfall this winter, a report on another page shows that development work is being actively prosecuted on the property of the Lynn Creek Zinc Mines, Ltd., and with most satisfactory results. The close proximity of this pro-

ducing group to the city of Vancouver renders its progress a matter of the keenest interest to the better-informed among the inhabitants of the Terminal City, who realize that the day is approaching when Vancouver, in addition to the other attractions which she offers to capital, will be the distributing and supply point of a large producing mining camp.

As was to be expected the immediate result of the entry of the Grand Trunk Railway into Hazelton has been the commencement of ore shipments from that promising district. Two companies have already sent out a considerable tonnage, and information to hand is that several others are almost ready to follow suit. Taking one thing with another the new year promises to be a busy and prosperous one in the northern mining camps.

The condition of the mining industry on the Coast, as referred to by Mr. E. Jacobs in his article at the commencement of this issue, is very encouraging, particularly as regards the increase shown in production during the past five years. Many causes have contributed in the past to make mining on our sea-board a matter of slow growth; but the turning point has now been reached, and it is only a matter of a year or two until the Coast districts will make as good a showing as the best mining camps of the district.

For the illustrations appearing in this issue we are indebted to the Provincial Department of Mines.

The Great Northern Railway has reduced the freight of concentrates from the Nickel Plate mill at Hedley to Tacoma, from \$13 to \$11 a ton.

From the Yukon it is reported that vast copper deposits have been found in the White River country.

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LATEST METAL MARKETS

(From "Chicago Mining World.")

Silver—Quotations for silver per fine ounce at New York and per standard ounce at London for the week ending January 29, were as follows:

	New York Cents	London Pence
Jan. 23	62½	28 13-16
Jan. 24	62½	28 13-16
Jan. 25	62½	28 9-16
Jan. 26	62½	28 9-16
Jan. 27	62½	28 5-16
Jan. 28	61½	28 5-16
Jan. 29	61½	28 5-16

MONTHLY AVERAGE PRICES OF SILVER

Month	High.	Low.	Avg.	Avg.
January	58½	54½	56.259	53.740
February	60½	58½	59.043	52.221
March	58½	58	58.360	52.731
April	61½	58½	59.265	53.364
May	61½	60½	60.754	53.312
June	62	60½	61.265	52.913
July	61½	60	60.615	52.661
August	63½	59½	61.600	52.186
September	63½	62½	63.361	52.442
October	64½	62½	63.504	53.317
November	63½	62½	29.016	55.573
December	64½	62½	63.390	54.994

Year

Copper—The copper market was unsettled last week with prices continuing low both in this country and at London. There was a further break in standard, but electrolytic was better maintained by large producers, who apparently were again working in harmony to maintain a uniform price; but consumers, both domestic and foreign, displayed little confidence and confined purchases to small lots after some larger purchases were made early in the week at prices ranging from 15.80 cts. to 16 1-8 cts. f. o. b. The higher prices subsequently demanded by producers checked the demand. At the close of the week electrolytic copper was nominally held at 16 1-4 cts. to 16 3-8 cts., f. o. b. for February, March and April shipments. Warrants in the London Metal Exchange now reveal net losses of £1 13s. 9d. for spot, and £1 15s. for futures which are quoted at £69 5s. and £69 10s. respectively.

Last week's exports totalled only 2906 tons, but imports were increased slightly. During the week ended January 23 the arrivals at Atlantic ports only included 2065 tons of copper, 340 tons of matte and 60 tons of ores. Since the first of January imports by steamers only at New York, Baltimore and Philadelphia included 6800 tons of copper, 375 tons of matte and 170 tons of ores.

Quotations for copper per pound at New York and per long ton of 2240 lbs. at London for the week ending January 29, were as follows:

	Lake	Elec	Cast	Standard London
Jan. 23	16½-1	16½-1	16½-16	£70 10 6
Jan. 24	16½-1	16½-1	16½-16	69 5 0
Jan. 25	16½-1	16½-1	16½-16	69 5 0
Jan. 26	16½-1	16½-1	16½-16	68 15 0
Jan. 27	16½-1	16½-1	16½-16	68 10 0
Jan. 28	16½-1	16½-1	16½-16	68 12 6

MONTHLY AVERAGE PRICES OF COPPER

New York—Lake Copper.				
	1912		1911	
Month	High.	Low.	Avg.	Avg.
January	14½	14½	14.526	12.930
February	14½	14½	14.606	12.750
March	15½	14½	14.911	12.601
April	16½	16	16.092	12.421
May	17	16	16.331	12.385
June	17½	16½	17.612	12.663
July	17½	17	17.536	12.875
August	17½	17½	17.694	12.856
September	17½	17½	17.724	12.671
October	18	17½	17.753	12.586
November	17½	17½	17.750	13.799
December	17½	17½	17.750	13.799

Year

NEW YORK—ELECTROLYTIC

Month	High.	Low.	Avg.	Avg.
January	14½	14½	14.425	12.482
February	14½	14½	14.435	12.437
March	15½	14½	14.853	12.363
April	16½	15½	16.093	12.263
May	17	16½	16.326	12.188
June	17½	16½	17.050	12.603
July	17½	16½	17.418	12.887
August	17½	17½	17.694	12.620
September	17½	17½	17.706	12.463
October	17½	17½	17.745	12.356
November	17½	17½	17.750	12.807
December	17½	17½	17.750	13.739

Year

Tin—The tin market was dull and had a downward trend last week, both at New York and London. The net decline at London was about £3 per ton, and in the domestic market from 1-2 cent to 7-8 cent per pound lower, as to position. Trading on the part of consumers was quiet, and the bulk of the business put through was among dealers. The weakness was attributed to heavy shipments from the Straits, which for the month are estimated at 5800 to 6000 tons. American January deliveries are estimated at 3500 to 3700 tons. The deliveries in the United States during January are expected to be close to 3700 tons despite the quite which has prevailed in the earlier part of the month. Consumers were interested in futures, and business has been booked for deliveries up to June.

Quotations for tin at New York and at London for the week ending January 29, as follows:

	New York	London
Jan. 23	£226 5 0—225 0 0	225 0 0—223 15 0
Jan. 24	£226 5 0—225 0 0	225 15 0—223 15 0
Jan. 25	£226 5 0—225 0 0	226 5 0—224 0 0
Jan. 26	£226 5 0—225 0 0	227 0 0—224 0 0
Jan. 27	£226 5 0—225 0 0	232 0 0—225 10 0

MONTHLY AVERAGE PRICES OF TIN,

New York.				
	1912		1911	
Month	High.	Low.	Avg.	Avg.
January	45.00	41.75	43.275	41.149
February	45.00	42.50	43.345	41.438
March	43.75	42.00	42.690	40.627
April	47.25	42.87½	43.970	42.166
May	47.10	44.30	46.055	42.940
June	49.25	44.00	46.046	46.018
July	48.00	43.00	44.665	42.968
August	47.87½	41.37½	45.849	45.260
September	51.25	47.00	49.232	39.593
October	50.75	48.62½	50.073	41.146
November	50.47	48.80	49.869	43.110
December	50.87½	48.33	49.899	44.942

Year

Lead—Lead was dull and easier in tone with small change in prices. On call at the New York Metal Exchange spot, January, February and March offered at 4.35 cents, with 4 1-4 cents bid, on Friday. For East St. Louis delivery spot, January, February, March and April offered at 4.20 cents, with 4.10 cents bid, on Friday.

London was irregular, but advanced 6s. 3d. net for the week. Soft Spanish closed at £16 16s. 3d., against £17 2s. 6d. on the preceding Friday.

Quotations for lead at New York and London for the week ending January 29, were as follows:

	New York Cts. per lb.	London Per Ton
Jan. 23	4.35—4.25	£17 2 6
Jan. 24	4.35—4.25	16 16 3
Jan. 25	4.25—4.35	16 16 3
Jan. 26	4.35—4.25	16 12 6
Jan. 27	4.35—4.25	16 15 0
Jan. 28	4.35—4.25	16 12 6

MONTHLY AVERAGE PRICES OF LEAD.

New York.				
	1912		1911	
Month	High.	Low.	Avg.	Avg.
January	4.50	4.20	4.485	4.476
February	4.30	3.95	4.068	4.450
March	4.50	4.00	4.167	4.456
April	4.40	4.10	4.213	4.458
May	4.25	4.00	4.164	4.456
June	4.60	4.15	4.395	4.465
July	4.87	4.50	4.669	4.493
August	4.90	4.75	4.581	4.518
September	5.25	4.75	5.071	4.500
October	5.25	5.00	5.088	4.419
November	5.00	4.35	4.633	4.419
December	4.50	4.20	4.300	4.450

Year

Spelter—Spelter was heavy, weak and lower. On call at the New York Metal Exchange spot was offered at 7.15 cts., with 7 cts. bid. January offered at 7.05 cts., with 6.90 cts. bid; February offered at 6.95 cts., with 6.85 cts. bid; April offered at 6.95 cts., with 6.75 cts. bid, on Friday. On call at the Metal Exchange for East St. Louis delivery spot offered at 7 cts., with 6.85 cts. bid; January offered at 6.90 cts., with 6 3-4 cts. bid; February offered at 6.85 cts., with 6 3-4 cts. bid; March offered at 6.80 cts., with 6.70 cts. bid; April offered at 6.80 cts., with 6.60 cts. bid, on Friday.

London advanced 2s 6d net. G. M. B. closed at £26 2s 6d, against £26 on the preceding Friday.

Spelter quotations at New York and London for the week ending Jan. 29, were as follows:

	New York Cts. per lb.	London Per Ton
Jan. 23	7.15—7.00	£26 2 6
Jan. 24	7.15—7.00	26 2 6
Jan. 25	7.15—7.00	26 2 6
Jan. 26	7.10—7.00	26 2 6
Jan. 27	7.15—7.00	26 2 6
Jan. 28	7.15—7.00	26 2 6
Jan. 29	6.90—6.70	26 2 6

MONTHLY AVERAGE PRICES—SPELTER

New York					London	
Month	High.	Low.	Avg.	Avg.	1912	1911
Jan. 6.65	6.25	6.505	6.521	26.721	£23 272	
Feb. 6.75	6.35	6.541	6.510	26.457	23.885	
Mar. 7.10	6.50	6.817	6.592	26.035	23.267	
April 7.00	6.55	6.799	6.479	25.646	23 014	
May 7.00	6.75	6.85	6.396	25.529	23.778	
June 7.25	6.90	7.011	6.529	25.765	21.365	
July 7.40	7.05	7.229	6.755	26.173	24.621	
Aug. 7.50	6.75	7.042	6.002	26.434	25.021	
Sept. 8.00	7.25	7.553	6.941	27.067	26.896	
Oct. 7.75	7.35	7.550	6.161	27.551	27.744	
Nov. 7.60	7.30	7.429	6.512	26.756	27.264	
Dec. 7.50	7.20	7.311	6.389	26.880	26.791	

Year 8.00 6.25 7.053 5.815 26.317 25.291

The wagon road between Masset and Queen Charlotte will be finished this year.

This year four properties, near White Horse, in the Yukon, will be shipping copper ore.

Dave Murphy of Rossland has taken charge of the Whitewater Deep mine in the Slocan.

Coast and Island Mining

Annual Meeting of Portland Canal Mining Co.—The Vancouver Assay Office — Lynn Creek Zinc

Doing Well — Progress at Portland Canal Camp — Pacific Collieries, Ltd.— General News.

PROGRESS AT PORTLAND CANAL.

The "Portland Canal Miner" of the 11th inst., says:—

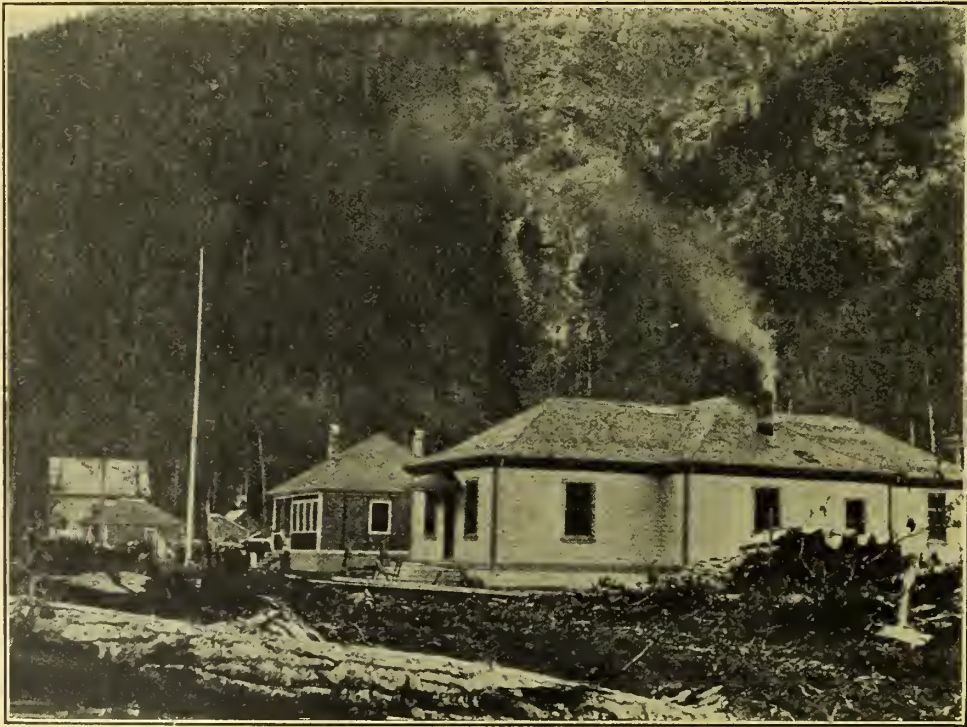
Though news in mining circles is naturally dull at this season of the year there is more or less development being carried on throughout the district. The feature, however, of the week is the resumption of development at Seven Mile on the Salmon river, where a 100-foot tunnel contract has been let to Richard Olsen, John Johnson and Ola Johnson, by T. H. Callaghan on behalf

crew is already at the Cascade Falls Mining Company's claims, both being in the Salmon River section.

Seven Mile—T. H. Callaghan, who represents locally the mining engineering firm of Leckie, Kirkpatrick & Co., has let a 100-tunnel contract to Richard Olsen, John Johnson and Olaf Johnson and the men are now at the property on the job. Last fall Mr. Callaghan erected bunk and boarding houses and prepared a camp, and on the arrival of Captain Guy Kirkpatrick, who closed the negotiations for the bond

ing, were in town this week from the mine to meet the Prince John, and took back with them a number of men who will work throughout the winter. The company will shortly hold its annual meeting in Victoria, the head office.

Red Reef—The contractors driving the tunnel are making good progress in the upper adit, and it is expected next week that the extension to the lower tunnel will be started. Additional steel rails and a dump car have arrived and will be taken to the property.



Provincial Mining Recorder's Office and Court House—Stewart, B. C.

of Leckie, Kirkpatrick & Co., who bonded the claims from Dan Lindeborg. To take up the contract the trio, who in association with George Bruggy own the Wire Gold group on the Marmot river, on which they have been working for some months, have suspended development there for the time being. Good reports continue to come down from Glacier Creek of the driving of the 2000-foot bore by the Portland Canal Tunnels Ltd., and more rapid progress is now being made as the drills are working in solid rock. Any day now work may be resumed on the property of the Indian Mines, Ltd., and a larger

with Dan Lindeborg, the owner, on the 19th ult., arrangements were completed for actual mining development. The adit will be driven on the vein, which is one of the best defined and persistent showings of galena in the Salmon River section.

Nine Mile—Messrs. Peterson and Pearson are driving a tunnel on the vein, and are now in about 30 feet. They have built a cabin and have supplies to carry them through for the winter season's development.

Cascade Falls — President Charles Bunting and his brother, William Bunt-

Wire Gold Group—Work has been temporarily suspended as noted above. The main tunnel is in 43 feet following the vein and on the face shows a pay-streak of 26 inches in width at the bottom and 30 inches wide at the top. Some splendid samples carrying free gold have been brought to town and have been shipped south by George Bruggy. The tunnel is well located as it gives foot for foot in depth as it progresses into the mountain. On the same vein, and 90 feet below, a second tunnel had been started just when the work was closed down on account of

the owners securing a contract on the Seven Mile property.

L. Anderson, Charley Miller and Pete La France, who have been exploiting the placers at the head of Bitter Creek, returned to town the first of the week being unable to continue outdoor development on account of the big fall of snow. The trio will await until the frost comes before resuming development.

ANNUAL GENERAL MEETING OF PORTLAND CANAL MINING COMPANY, LIMITED

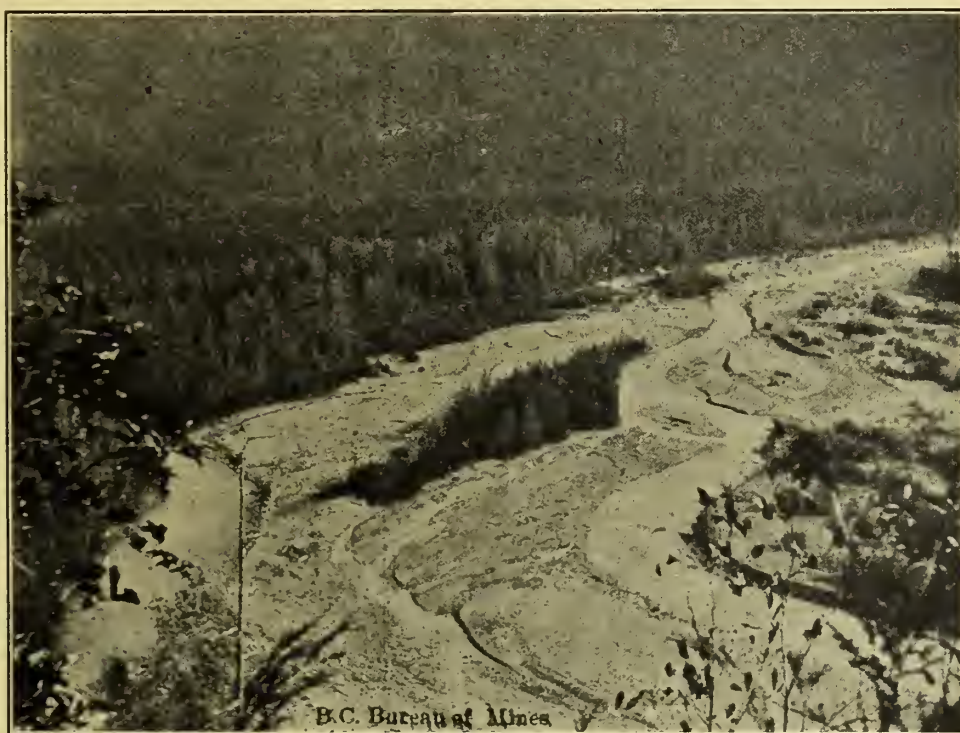
The annual general meeting of the Portland Canal Mining Company, Ltd., was held at Victoria on the 9th inst.,

companies owning property on the "Main Fissure Zone" of the Glacier Creek upon which is located the mine of this company. Resumption of mining operations in that neighborhood from a low level for the ultimate extensive development of the various mines was contemplated. The owners of the companies were willing to give something more than one half of their holdings if money could be provided sufficient for this purpose. Canadian and English capitalists were approached with this proposition, but, after protracted negotiations they failed to take it up.

While discussing tentative plans the formation of a new company for driving the tunnel as proposed was suggested. When the details of this had been properly worked out it met with

Company, Ltd., the Glacier Mining Company, Ltd., the O. K. Fraction, and the "A" and "B" mining claims. The property of these companies covers the main fissure zone for a length of more than three miles with the exception of one small claim to the owners of which the contract has been submitted for their approval and signature.

The Portland Canal Tunnels, Ltd. has purchased from this company many of the supplies that were on hand at the time of suspending operations in November, 1911, at a fair cash price. It has also agreed to lease this company's power plant, buildings, mill and other improvements at a rental sufficient to take care of the interest on its outstanding indebtedness and to carry on the current expenses.



Bitter Creek at Junction of Bear River—From Mt. Dolly.

when, after adoption of report and accounts for 1912, the following directors were elected for the ensuing year: Messrs. C. H. Dickie, J. A. Mara, J. R. Waghorn, A. von Alvensleben, H. Martin and R. Angus. Albert F. Griffiths was re-elected auditor.

The following is the report of the manager, which developments of the past year render of especial interest:—

Manager's Report

Victoria, B. C. 9th Jan., 1913.

To the president and directors of the Portland Canal Mining Company, Ltd.
Sirs:—

The report read at the last annual meeting of this company, on the 26th of April, 1912, mentioned the proposed amalgamation of several of the mining

companies and promptly received the financial support of most of the directors and holders of the debentures of this company.

The Tunnels Company agrees to do the necessary work to open the vein from the level of the Portland Canal Mining Company's concentrating mill and the mining company has entered into a 21 years' contract with the tunnels company for the transportation of its ores, the drainage of its ground, and other matters, upon terms which have been deemed fair by both parties. A copy of the form of contract accompanies this report.

This contract has been signed by the Portland Canal Mining Company, Ltd., The Stewart Mining and Development

All the stock of the Tunnels Company, except the 800,000 shares taken by the underwriters, has been offered to the shareholders of this company at the same price as that paid by the underwriters—5c per share—and ample time given in which to pay for it. These 2,000,000 shares have been allotted in the proportion of one share of the Tunnels for each two shares of the mining company, and are offered with the intention of allowing the owners of Portland Canal Mining Company's shares to participate in the enterprise on an equal basis with the underwriters if they so desire. Provision has been made to dispose of these shares in another manner if the shareholders of this company do not avail themselves of the offer.

Preliminary work on the tunnel was begun last October. A blacksmith shop and other buildings were put up and a piece of road built to the proposed site. The first underground work was slow and expensive, as more than 100 feet of wash and gravel had to be gone through necessitating the heaviest sort of timbering. At latest reports the tunnel was in something over 200 feet and in solid rock. The progress from now on will be much more rapid. The equipment is all that can be desired and the work will be energetically pushed.

The vein upon which the principal workings of the Portland Canal mine are located should be reached before the close of this year at a distance of about 2,300 feet from the portal of the tunnel and at a vertical depth of about 2000 feet beneath these workings. This is, however, only one of several veins which the tunnel will ultimately develop, all of which probably extend into the ground of this company.

It is my belief that the means now employed are the proper ones to commercially develop the ore bodies of this great vein, and I hope and expect to be able to report developments of substantial interest to the directors and shareholders of this company at the next annual meeting.

I am, yours truly,

W. J. ELMENDORF,
Manager.

BRITANNIA COMPANY PLACES LARGE ORDER

From the "Mining and Engineering World" Chicago, Illinois, it is learned that the Hardinge Conical Mill Company of New York, advises that the Britannia Mining and Smelting Company, Britannia Beach, B. C., has placed orders for five eight-foot Hardinge conical pebble mills of the latest design and one six-foot Hardinge conical ball mill, which mills are to be used in connection with the minerals flotation process. The same company has been acquiring by purchase, other mining properties in the vicinity of the group of mineral claims it has long held, situated on Britannia Mountain, Howe Sound.—"Vancouver Province."

THE VANCOUVER ASSAY OFFICE

An order in council has been passed at Ottawa by which the charge of one-eighth of one per cent. on the assaying and stamping of gold at the assay office in Vancouver has been abolished. There is now no difference between the charges made at Vancouver, San Francisco or Ottawa, and it is confidently predicted that big shippers of gold from the Yukon, who have heretofore sent their metal to Ottawa or San Francisco by registered mail will now send it to Vancouver's assay office. This will make Vancouver a big distributing centre for the wealth of the mining camps of the Yukon and British Columbia. Strange as it may seem, this small frac-

tion is said to have adversely affected Vancouver to a quiet unappreciated extent. The largest share of the gold bullion which has been pouring into Ottawa has been from territory which should be tributary to Vancouver. The only difference between Ottawa and Vancouver was this one-eighth of one per cent. Mining and commercial men have looked forward to this reduction in assay office rates with great eagerness as it has been conceded that with this charge removed all of the northern gold would be sent to Vancouver. Merchants realize that the assay office should be one of the city's most valuable assets. It has been proved that the gold producers buy their supplies and machinery in the city where they convert their bullion into money. It is expected that in consequence of the Dominion Government's action, shipments of gold to Vancouver should double in the course of the next year.—"Vancouver Province."

DEVELOPMENT AT RED REEF

The five contractors who are prosecuting the development on the Red Reef—H. E. Newton's property opposite town, are making good progress in continuing the main, or upper tunnel, which is now in some 225 feet, says the "Portland Canal Miner" of the 4th inst. A blacksmith shop has been built at the mouth of the lower workings and after the arrival of the boat next Thursday with ore car and rails this adit will be extended.

BOARD OF CONCILIATION

Majority Report Does Not Favor Increase of Wages at Kootenay Metal Mines

The Board of Conciliation and Investigation, which held sittings in West Kootenay district during January, has concluded its work and sent in to the Dominion Minister of Labor its report, or rather reports, for there was a minority report as well as that of a majority of the members of the board.

The representative of the mine-owners was Mr. C. R. Hamilton, barrister, of Nelson, and of the miners, Mr. J. W. Bennet of Fernie, Crow's Nest Pass district. These agreed upon Mr. W. H. Bullock-Webster of Victoria, barrister, formerly of Nelson, as chairman of the board. The report of Messrs. Bullock-Webster and Hamilton was as follows:

Report of Majority of Board.

"To the Honorable The Minister of Labor, Ottawa, Ontario:

"Your Board of Conciliation and Investigation in regard to the demand of some of the Miners' Unions in Kootenay for a flat raise of 50 cents per man in the following mines, namely: Rambler-Cariboo, Hope (Ruth Mines, Ltd.), Bluebell, Standard, Van-Roi, Queen (Salmo), Hewitt, (Silverton Mines, Ltd.), Lucky Jim, Surprise, Noble Five, and Granite-Poorman (Kootenay Gold Mines, Ltd.), all in West Kootenay, and Sullivan, in East Kootenay, convened

at Nelson on Monday, January 6, 1913, pursuant to notice given to all parties. In addition to the three members of the board there were present during the proceedings representatives from the Western Federation of Miners and the local unions, on behalf of the miners, and of all the mine-owners concerned with the exception of those of the Noble Five and Lucky Jim mines.

"The Board sat and heard evidence in Nelson on January 6, 7, 10 and 11; travelled to New Denver on January 13 and heard evidence there on the 14th; returned to Nelson on the 15th; heard evidence and a summing-up of the same by both sides in Nelson on the 16th, and spent 17th and 18th in discussion and deliberation for the purpose of making this report.

Miners' Claim and Owners' Reply.

"The miners stated that their claim for an increase of 50 cents per diem was based on:

"(1) The increased cost of living with but little increase in wages.

"(2) The increased price of metals during the past year.

To this the mine-owners replied that they were not in a financial condition which would allow the mine to continue with the increase asked, and that they were paying the wage prevailing in British Columbia and the Western States. Evidence was given by both sides of the increase and, in some instances decrease of prices of food and clothing, and, while there was some difference as to the amount of the increase, the evidence established to the satisfaction of the board that the general tendency in the cost of food and clothing had been upward.

Men's Living Expenses

"The following facts, however, were brought out in the evidence and not contradicted, and these have been taken into consideration in making this report:

"(1) The men demand and obtain in both food and clothing the best of their kind, and the tendency in this regard is more marked now than a few years ago.

"(2) The boarding-houses, at which the single men and some of the married men (together forming a large majority, at least 80 per cent. of the workers) live, are maintained by the mine owners and a flat charge of \$1 per day per man is charged to the men, and 'his has always been the charge throughout past years.

"(3) No evidence was furnished as to the relation of the average married man's living expenses to his wages except by:

"(a) Mr. Roberts, secretary of Moyie Miners' Union, whose monthly cheque averaged \$88; who was not in debt; owned his own house and other real estate, and some mining stock bought out of his earnings; carried no insurance.

"(b) Mr. Villeneuve, secretary of Kimberley Union, and married, was called, but did not give any evidence supporting the men's contention that the wage at present paid is insufficient for their proper maintenance.

"(c) Mr. Armstrong of the Van-Roi Mine, who boarded at the company's

boarding-house; owned his own house in Slocan City, where his wife and four children lived for the sake of education; carried insurance and had a bank balance.

"(d) In the case of single men, two witnesses were called by the Union's representative. One, Shaler, 26 years old, stated that he had been working six years; that he was qualified as a miner, timber-framers' helper and timber-framer; that he earned from \$3 to \$4 a day; that he could not live as he considered he ought to live on this wage; that a miner, taking everything into consideration, would only work about seven months in the year, or, as he expressed it, that he found seven months as long as he could stand it day in and day out. That in his opinion a miner should have \$1800 a year to make life worth living, or in other words, a wage of more than \$9 per day. His evidence also showed that the amount of his earnings after paying for his board and lodging amounted in July to \$50, in August to \$78.25, in September to \$74, in October to \$92 and in November to \$90.

"The other, David Murphy, also a single man, claimed that he would not live on the existing wage, but admitted that since he came to British Columbia in 1895 he had put into the ground in mineral claims which he owned between \$6,000 and \$7,000, including his own time, and that this came from his earnings as a miner.

Savings of Miners.

"(4) At the Van-Roi mine \$3,000 to \$3,500 is put into savings in the bank by the men each month out of a total monthly payroll of \$10,000.

"(5) At the Hewitt mine, where nine men are working, these have savings amounting to \$10,908.50 in the bank of which \$6,984 was saved by married men and the balance by single men; saved during an average period of two years and two months.

"(6) At the Rambler-Cariboo mine, at a time when the manager had to ask the men to postpone payday, to which they agreed, six or seven of the miners, including the foreman, brought the manager \$3000 in cash and lent it to him at eight per cent. to continue the work.

Little Evidence at New Denver.

"The board went especially to New Denver, to sit nearer to some of the mines affected in order that all evidence available might be given, but notwithstanding that a number of miners were present, some of them married, in spite of the invitation of the chairman twice repeated to any and all who desired to give evidence to come forward none came to speak of the condition of married men except Mr. Armstrong, already mentioned, who gave evidence under subpoena at the request of the mine-owners. The other married men already mentioned gave their evidence in Nelson.

"Though shyness or diffidence in coming forward might be present, the board feel that if the claim for an increase had been deep-rooted in the increased cost of living witnesses would not have been lacking.

Conclusions of Board.

"From the evidence adduced, of which the foregoing are examples, your board find no difficulty and have no hesitation in arriving at the conclusion that the present scale of wages is sufficient to maintain a married man and his family in all the food and clothing they need for health and comfort, with some margin for incidentals, such as insurance, sickness, etc.

"The only contention in this direction of which the evidence will allow is that the margin of the income of a miner over his expenses in food and clothing may be less than it has been during some period or periods a few years back. The question is, do the present conditions justify the increase of the present margin? not in order to preserve to the men the means of obtaining a reasonable sufficiency of the necessities of life but to provide them with a surplus over these necessities at least equal to those which they have at every time in the past.

Few Dividends Paid.

"In this regard we note the following of the properties involved in this enquiry:

"(1) The Standard (Silver-Lead Mining Company) is paying at present \$50,000 a month but has not repaid the capital invested, using the profits for the development of other properties.

"(2) If the increase demanded was added throughout to the payrolls of the Consolidated Mining and Smelting Company it would increase them by \$272,000; while the profits of that company last year were \$304,000 the proposed increase would reduce a surplus representing five per cent. on the capital to one equal to half of one per cent.

"(3) Of all the other properties involved in this enquiry the evidence shows without exception that the shareholders have received back nothing in the shape of either principal or interest on their outlay and that the increase, if allowed, for a long time to come must be supplied by the shareholders, and this in spite of the fact that the life of a mine must sooner or later come to an end, and, therefore, principal as well as interest have to be provided for out of the product.

Comparison of Wages.

Finally, the scales of wages in 59 properties taken from all over the western United States and British Columbia have been collected and introduced as evidence in the inquiry and an average struck by your board, with the following results:

	Scale in force here	Average above mentioned	Of the Scales Collected
Miners	\$3.50	..... \$3.53	..... \$3.50 is paid by 29 mines out of 43
Handminers.....	\$3.50		
(in one mine..)	\$3.40		
and in one mine	\$3.25	..... \$3.35	..... \$3.50 is paid by 23 mines out of 37
Muckers	\$3.00	..... \$3.12	..... \$3.00 is paid by 26 mines out of 49
Timbermen	\$2.50		
and	\$4.00	..... \$3.82	..... \$4.00 is paid by 24 mines out of 37
Surfacemen	\$3.00	..... \$2.97	..... \$3.00 is paid by 25 mines out of 38
Board	\$30.00	..... \$31.38	

The lead-producers in the United States get one per cent. more for their lead than those here do, based on a comparison of London and New York

quotations for the years 1902-1911.

One other comparison: As already shown with two exceptions none of the mines here concerned have repaid their shareholders anything.

In the Coeur d'Alene district, United States of America, about 150 miles distant, where most conditions are similar and there is no evidence of any interference in the cost of living, properties have paid to their shareholders as follows:

Bunker Hill more than \$13,000,000.

Hecla more than \$2,600,000.

Federal Mining Company more than \$9,000,000.

Success more than \$80,000.

And the following is the comparative scale of wages of this district and the Coeur d'Alene:

In this District	In the Coeur d'Alene
Miners	\$3.50. \$3.50
Handminers	\$3.50 \$3.50
Muckers ...	\$3.00 \$3.00 and \$3.50
Timbermen.	\$3.50 and \$4 \$3.50 and \$4.00
Surfacemen.	\$3.00 \$3.00

Final Considerations.

It appeared in the evidence that the Consolidated Mining and Smelting Company made an offer of a certain increase before this inquiry was demanded and it has been suggested that this is evidence that an increase can and ought to be paid. Your board has eliminated the fact of this offer entirely from its consideration because they consider:

(1) That an offer made under stress of a demand and for the sake of peace is not to be taken as an admission of the justice of anything.

(2) That if taken as an admission here the board will create an obstacle to amicable settlement of future disputes, as all parties will be afraid to make offers which will be construed into admissions of justice of demands.

(3) That such a course would provide a temptation in the future to procure such admissions by extortionate demands.

(4) That the offer above-mentioned was made only for the sake of peace and was not made by all or even a majority of those affected.

In view of the foregoing, in the opinion of your board the present conditions in this district and in the mines concerned do not justify any increase in the scale of wages prevailing at, or any disturbance of the relations now existing between employees and employers in, the mines pertinent to this inquiry.

(Signed)

W. H. BULLOCK-WEBSTER,

Chairman.

C. R. HAMILTON,

Member of Board.

MINORITY REPORT.

The full text of the report of Mr. J. W. Bennett, representing the miners, which constitutes a minority report, is

not available to the B. C. Mining Exchange at present. The following having been reprinted from the District Ledger, Fernie, the provincial organ of the United Mine Workers of America, printed at Fernie, doubtless includes the most important of Mr. Bennett's conclusions:

"At the commencement of his report Mr. Bennett expresses his regret that he is constrained to submit a minority report, and pays tribute to the chairman and Mr. Hamilton for the pleasant manner in which the proceedings and deliberations were conducted.

"He deals first with the higher price of metals as the minor premise from the standpoint of the miners. In this connection the minority report says:

"To accept as a principle that the profit derived from the sale of a given commodity should be shared I deem economically unsound, illogical, and in the main impracticable, because if it be admitted that employees should share when a profit be made then it must as a corollary be admitted that if loss ensue in an industry the employees should likewise be parties to the loss. That there are instances where the employees are allowed to share in the profits may be practicable under certain peculiar conditions as a utilitarian expediency, but these exceptions in nowise affect the basic principle that undertakings are not entered upon primarily for the benefit of the employees per se, but for the profits that may be provided therefrom and any advantage that the worker may extract from the proceeds of his efforts is accidental only, not fundamental. That this was recognized—whether consciously or otherwise is of little import—was demonstrated quite clearly in the evidence submitted by the different representatives of the mine owners.

"It was acknowledged that some could pay the scale demanded because they were on a dividend-paying basis, but would not do so because the investors had moneys in other enterprises that did not pay at present. Others averred that they could not pay the scale because they were not making any profits, whilst in many of the camps in Idaho, Montana, and other states of the United States, from a statement presented it was shown that the profits made were exceedingly large, and yet the wages paid were but little different to those in vogue in the district included in the present controversy; therefore, the question of wages in relation to the higher prices (or profits) of metals is not entertained as a factor in the administration of companies' affairs.

Supply and Demand.

"In reality wages are contingent upon the law of supply and demand as was so tersely asserted by Mr. W. E. Finch in his evidence. In short, profit-sharing may at times be indulged in as a practice by individual institutions, but the amount of wage paid (or for that matter for every other commodity that is bought) must in the main conformably to economic law in the realm of production, depend upon its average cost of production, and in the realm of

circulation the price of a commodity is influenced by the law of supply and demand. The worker selling his only commodity (physical and mental energy) is subject to these inexorable laws, namely, cost of production and the law of supply and demand, hence, the higher or lower price of metals is in plain English 'none of his business.'

"The main point at issue—the cost of living—is of vital import to the mineworker, and because of the increased price of the commodities he must have access to, it is imperative that he should have an increase in his money wage if he is to prevent a reduction of his present standard of living. That the price of living has materially increased is conceded by both

Living Cost Increase

"Government statistics for the past 10 years were cited as giving 31 per cent. as the increase while a recent investigation by Professor Mackenzie was quoted as giving 18 per cent. (in Canada) increase from what obtained several years ago. Fifty cents a day increase per man was the wage-scale demanded. This, according to calculations made by Mr. S. G. Blaylock, meant an increase of 14 per cent. in the payroll of the company. In my opinion, taking even 18 per cent. as a basis of calculation, the men were modest in their proposed amended scale and this is more pronouncedly so when it was conclusively proven that despite the past ten years' increase in the cost of living there has been no appreciable difference in the wages paid to quartz miners since 1900. That some of the companies tacitly acknowledged there was merit in the demands of the miners is evidenced by their action in offering a slight increase when they learned what the men proposed to do, assigning as the reason therefore, desire to keep the best men. This cannot be admitted as wholly sound because it was made to all men in certain grades, but was not offered to the outside men at all, and it is natural to assume that there are varying grades of efficiency in the grades that were offered the advance as well as in the surface men who were not included in the proposed advance. Accepting as correct that 18 per cent. is the increase in the cost of living and, as already mentioned, 50 cents per day means but 14 per cent. of an increase, therefore the demand made by the men is to me a most justifiable one and therefore upon this point I do not concur with the other members of the board in their contention that there was not sufficient evidence forthcoming to show cause why it should be paid.

Mineowners Gave Most Evidence.

"The documentary and oral evidence submitted by the representatives of the mine owners was greatly in excess of that submitted by the representatives of the miners, especially in the oral portion, for which there is a good and sufficient reason, although not readily appreciated or understood by those who have never had the experience, namely, that many of the miners when requested to testify asked that they be excused

lest they lose their jobs. To those on the outer ridge of the industrial arena this may seem strange, but to those in the midst of the labor world it is not so regarded; on the contrary, it is common knowledge of the workers in practically every industry.

"To sum up. I do not consider that the men are entitled to an increase simply because of the higher price of metals, but do hold that if the purchasing power of their wages has been reduced consequent upon the enhanced price of the commodities they must have to keep their own commodity, that is, their energies, up to the standard they have heretofore enjoyed, then, indeed, the higher (nominal) scale asked for is, in my estimation, a moderate one.

Wants All Round Increase

"This I do most strongly recommend: That it be suggested to the operators that should they decide to give an advance to their employees, it be applicable not only to those working underground, but likewise to the surfacemen, outside laborers, because the increased cost of living is felt by that section more—proportionately—than it is to the higher paid grades."

"Attached to Mr. Bennett's report is a summary of the evidence given at the session of the board."

DEVELOPMENT WORK COMMENCES ON AUFEAS MINE

The "West Yale Review" of the 18th inst. says:—

Work in connection with the development of the Aufeas mines began Monday morning and has continued all week in spite of cold weather and deep snow. L. B. Cleaves, vice-president of the company, has been in charge. His gang including J. H. Bears, W. Gardiner, F. Fritz, W. Anderson, W. Robinson and H. Johnson, has constructed a winter road from the automobile road to the site of the new camp, which will be good for at least two months.

The contract for the driving of the tunnel has been awarded to Henry Johnson, and was signed Wednesday. It calls for the beginning of work at once and continuous operation by two shifts. The contractor estimates the time required for its completion at from three to three and a half months.

Lumber has been ordered and hauling will begin on Monday. Already the camp site has been cleared and foundation timbers cut.

The erection of camp buildings will begin as soon as the lumber is on the ground and will go on simultaneously with the beginning of the work in the tunnel.

The cutting of the snow road was an interesting task. The snow is about three feet deep and the cutting of every tree produced a snow storm. Several large stumps had to be blown out. The result is an easy grade on a nearly uniform depth of snow and with a minimum of zig-zagging.

During the building of the camp and driving of the tunnel small forces only

will be employed. It is now definitely decided not to clear for the aerial tram line until the ore body is located. By May if the very conservative expectations of the directors are realized the tunnel will have reached the vein, actual mining on a large scale will be in progress and shipping of ore to the smelter will begin.

Unless the indications on the surface and in the upper tunnel prove entirely illusory, which is hardly conceivable, there will be a large mining camp on Wardle Creek next summer drawing supplies from Hope and providing a pay roll most of which will be spent in Hope.

In the meantime very encouraging reports have been received from inquiries as to facilities for treatment and marketing of the arsenical contents of the ore as soon as the company is in a position to separate and ship it.

RICH ORE FROM PHOENIX MINE

The "Rossland Miner" of the 4th inst. says:—

In the last shipment from the Phoenix some of the ore was sacked, and the remainder was shipped from the dump, without sacking, in bulk.

Mat Trewhella, the lessee of the Phoenix, reports that the returns from the sacked ore, which was carefully sorted, was \$90 to the ton, while the unsorted ore in bulk gave returns of \$22 to the ton. Mr. Trewhella is very much pleased with the way the Phoenix is turning out and expects to ship a considerable quantity during the present year, as his lease will run through 1913 and extend into 1914.

HOPEFUL VIEW OF OUTLOOK

A most hopeful view of the financial outlook for the coming year is expressed by Mr. Charles R. Hosmer, the well-known Montreal financier, in the annual number of "The Monetary Times," although many leading authorities abroad think the pace set in Canada is altogether too rapid, and that the time is about due when the pendulum must swing in the opposite direction. These financiers pointed to the large municipal borrowings west of the Great Lakes, and the land boom in that section, as special reasons for sounding a note of caution. One need only visit these prosperous communities to realize that they must have money, says Mr. Hosmer, and large sums of it, to keep up with their natural growth. The question of sewers, sidewalks and other necessary expenditures must be met. As to speculation in city and town lots, their imagination had probably been stimulated by hearing of individual transactions, where very large sums had been paid for choice corner lots in these growing towns, many of which have been purchased by chartered banks, who think they can afford to pay fancy prices when it means securing permanent locations that will attract public deposits and other profitable business.

PERSONAL AND GENERAL

Movements and News of Prominent Mining Men.

Written for the B.C. Mining Exchange by E. Jacobs

While it is hardly practicable to make mention in this connection of all the mining engineers, metallurgists, and others connected with the mining industry of British Columbia during the year 1912, the following notes will give some information concerning quite a number of them. Those who are not included will please make allowance for lapses of memory on the part of the writer, and not attribute to him intentional omission of names that in all likelihood are well worthy of inclusion in any record of the doings of those engaged in advancing one of the most important industries of this Province:

Mr. A. W. Allen was engaged in looking after office matters for the Lucky Jim Zinc Mining Co. with office at Kaslo, Kootenay lake.

Mr. James Anderson, also of Kaslo, continued in the position of manager of the company owning the Ruth-Hope group of silver-lead mines and concentrating mill near Sandon, Slocan; also of the affairs of the Ferguson Mines Ltd., Lardeau.

Mr. W. M. Archibald, of the mining engineering staff of the Consolidated Mining and Smelting Co. of Canada, Ltd., with headquarters at Trail, West Kootenay, was kept busy throughout the year making examinations or superintending the development of numerous mining properties.

Mr. L. K. Armstrong, mining engineer, of Spokane, Washington, visited the Province several times in 1912 on mining business.

Mr. W. H. Armstrong, of Vancouver, managing director of the Nicola Valley Coal and Coke Co., among his many activities devoted much time to the affairs of that company, at the property of which important developments occurred in 1912.

Mr. James Ashworth, consulting mining engineer Vancouver, included in his year's professional work a visit to a coal property in the northern part of Cariboo district, in the vicinity of Bear river.

Mr. Thos. Avison, formerly lessee of the Idaho-Alamo silver-lead mines, in Slocan district, disposed of his interest in those properties to a Spokane syndicate, and later found occupation at the old Alamo mill.

Mr. Geo. H. Aylard, of New Denver, after having for years been in charge of the Standard silver-lead mine, in Four-mile camp, near Silverton, Slocan lake, relinquished the management of the Standard Silver-Lead Mining Com-

pany about the end of October, and thereafter spent the winter with his family in Victoria.

Mr. Melbourne Bailey, manager of the John Hopp hydraulic placer-gold mines in the vicinity of Barkerville, Cariboo, after the close of the gravel-washing season joined his family in Tacoma, Washington, and enjoyed the benefits of civilization for a while.

Mr. Chas. A. Banks, an experienced mining and stamp-mill engineer from New Zealand, in the autumn took charge of the Jewel gold mine and stamp mill, near Long lake, Boundary district, and during the few remaining months crushed a quantity of ore and made a fair recovery of gold.

Mr. W. J. Barker, after having for a number of years been foreman of the Arlington gold mine, in Erie camp, Nelson mining division, under Mr. Leslie Hill, resident engineer for the owners, the Hastings (British Columbia) Exploration Syndicate during the latter half of the year leased the mine and successfully worked it on his own account.

Dr. Alfred E. Farlow, of Montreal, president of the Canadian Mining Institute visited British Columbia in September. After presiding at the semi-annual meeting of the Institute, held in Victoria, he proceeded to Frank (Alberta), where another meeting of the Institute was held.

Mr. A. J. Becker retired from the management of the Lucky Jim zinc mine, at Bear lake, Slocan, in the autumn, and gave his attention to the development of the Apex mine, near New Denver, Slocan lake.

Dr. J. Macintosh Bell, formerly director of the Geological Survey of New Zealand, but now with Ehrlich & Co., of London, England, visited a number of mines in Kootenay district late in the autumn.

Mr. W. L. Bell was appointed superintendent of the British Columbia Copper Co.'s smelter at Greenwood last spring, and later made a record for excellent metallurgical work at that establishment.

Mr. W. Bennett had charge of development work at the Mountain Con mine beyond Cody, and the McAllister Group mine, north fork of Carpenter creek, both in Slocan district. New mine buildings were erected on the latter property.

Mr. Chas. Biesel left Boundary district, where for several years he had been superintendent of mines for the Consolidated Mining and Smelting Co.,

and removed to Arizona, where, in the capacity of general manager he took charge of the mining properties of the Mines Company of America.

Mr. T. W. Bingay continued as controller for the Consolidated M. and S. Co. Trail.

Mr. W. H. Bishop had a busy year as assistant superintendent of the Granby Consolidated M. G. S. and P. Co.'s big copper smelter at Grand Forks, Boundary district, the superintendent having been engaged at Granby bay, Observatory inlet, a considerable part of the year.

Mr. S. J. Blaylock, assistant general manager for the Consolidated Mining and Smelting Company of Canada, Ltd., shared with his chief the onerous duties of management of that company's extensive mining and metallurgical operations throughout a successful and profitable year.

Mr. Chas. Brand again had charge of the development work the British Columbia Copper Co. did on the L. H. property, situated in the mountains a few miles from Silverton Slocan lake.

Mr. H. A. Brandt, after having been at the Lone Star and Washington mine for a while, was transferred by the British Columbia Copper Company to the Eureka Copper mine, near Nelson, after the company had taken hold of that property under option of purchase.

Mr. W. M. Brewer went to Alaska to manage a small gold mine there. He remained in the North throughout the remainder of the year.

Mr. James Cronin, of Spokane, Washington, took charge of the Standard Silver-Lead Mining Co.'s mine and concentrating mill at the end of November, having succeeded Mr. Geo. H. Ay-lardlard in the general management of the company's affairs at Silverton.

Mr. Graham Cruickshank, of the engineering staff of the Consolidated Mining and Smelting Co., conducted some experimental work in connection with the reduction of zinc ore at Nelson in October, and later undertook the treatment of Le Roi ores at Rossland in this connection using the Elmore Vacuum plant.

Mr. F. E. Cummins resigned as superintendent of the Surprise mine, above Cody, Slocan, in September, after having completed the raise from the extension of the Last Chance No. 3 adit to the old workings of the Surprise, more than 800 ft. above.

Mr. J. H. Cunningham, of Ladysmith, Vancouver Island, was promoted to the position of superintendent of the Canadian Collieries (Dunsmuir) Limited's Extension colliery, last summer.

Prof. Joseph Daniels, of the College of Mines, University of Washington, Seattle, read a paper at the February meeting of the western branch of the Canadian Mining Institute, and in March was on Texada Island with a party of mining engineering students from the university.

Mr. G. W. B. Daniell, of the staff of the Nicola Valley Coal and Coke Co., Middlesboro, attended the Canadian Mining Institute meeting in Victoria in September.

Mr. T. M. Daulton, of Ruby creek, Atlin camp, spent the winter in Seattle, Washington.

Mr. E. R. Davidson, of Spokane, was in charge of the development on the Eureka group in Ainsworth mining division, toward Whitewater camp, for the Eagle Lode Mining Company of Spokane, Washington.

Mr. A. W. Davis, one of the Consolidated Mining and Smelting Co.'s mining engineers, was in Skeena and Portland Canal districts during the year, as well as in various other parts of the Province, examining mining properties.

Mr. M. S. Davys returned to the Province from England and made New Denver, Slocan lake his headquarters while directing the operations of the Silverton Mines, Ltd., of which company he is managing director.

Mr. Geo. B. Dean was superintendent at the Silver Ridge mine, above Three Forks, Slocan, for the Finch Syndicate, which was developing this property under option of purchase.

Mr. Ed. Dedolph, formerly of Kaslo, Kootenay lake, was engaged at McGill University, Montreal, in conducting experiments with various processes for the reduction of zinc ore, under the auspices of the Mines Branch of the Canada Department of Mines, Ottawa.

Mr. Ivan Lashmutt, who for some time was doing development work in Ainsworth camp for the Hobson Silver-Lead Co. of Spokane, succeeded Mr. Wm. Leete as superintendent of the Yankee Girl group, Ymir, which property was operated by Spokane men who commenced shipping from this mine to Trail late in the year.

Mr. J. H. Dickson left the Columbia Coal and Coke Co., of Coalmont, Tulameen, and went to Moresby Island of the Queen Charlotte group in September for Mr. Andrew C. Larson, afterward joining that mining engineer's office staff in Vancouver.

Mr. H. E. Dodge, who was accountant at Trail for the Consolidated Mining and Smelting Company, left British Columbia in September for New York to there take charge of Mr. W. H. Aldridge's office affairs.

Mr. E. J. Donohue was Mr. J. W. D. Moodie's chief assistant at the Britannia Mining and Smelting Co.'s office at Britannia Beach, Howe Sound, and is continuing in that capacity.

Mr. W. B. Dornberg, of Spokane, manager of the Treasure Mountain Silver-Lead Co., had charge of the development work done on the company's mining property on the eastern slope of Hope mountains about 20 miles from Otter flat, Tulameen.

Mr. R. G. Drinnan, of Vancouver, spent part of the year on coal-mining property in the eastern foothills of the Rocky mountains, where preparations for important operations are being made.

Mr. Howard W. DuBois, beside giving attention to the opening of the Quesnelle Hydraulic Gold Mining Co.'s placer-mine on Twenty-mile creek, in Quesnel mining division, visited the Hazelton district, in Skeena country, last summer.

Mr. A. F. Eastman, of Tacoma, Washington, spent a considerable part of the year at the Tacoma Steel Co.'s Marble Bay Mine, near Van Anda, Texada island, in the capacity of manager for the owning company, which in the autumn and early winter suspended ore-production and restricted its efforts to the development of the thirteenth level of the mine, which is at a vertical depth of about 1100 ft.

Mr. W. J. Elmendorf, of Victoria, general manager for the Portland Canal Tunnels, Ltd., got that company's deep-level adit well under way during the latter part of the year.

Mr. Newton Emmens was engaged in connection with the development of a zinc property in Lynn creek camp, distant a few miles from Vancouver.

Mr. C. D. Emmons continued to advise the B. C. Oil Company, Vancouver, in the capacity of consulting engineer, concerning oil-drilling operations on Graham island of the Queen Charlotte group.

Mr. Evan Evans, inspector of mines, gave close attention to the coal mines in the part of the Crow's Nest Pass district that is under his official supervision.

Mr. George Watkin Evans, consulting coal geologist and engineer, Seattle, Washington, spent the greater part of the field season in examining coal lands for British Columbia clients.

Mr. Geo. E. Farish, of New York, succeeded Mr. Wm. Watson as general manager in British Columbia for the Sheep Creek Motherlode Mining Co., operating a gold mine and stamp mill in Sheep creek camp Nelson mining division.

Dr. R. W. Brock, director of the Geological Survey of Canada, was a visitor to British Columbia in September, when he attended the semi-annual meeting of the Canadian Mining Institute and, as well, met a number of members of his field staff who had spent the season in the West.

Mr. B. Browitt remained as manager of the Diamond Vale coal mine until work was suspended at it during the first half of the year.

Mr. D. J. Browne superintended operations at the Van-Roi silver-lead-zinc mine and concentrating mill, in Four-mile camp, Slocan lake, during the three months' absence of Mr. Douglas Lay, and afterwards returned to his former position with the Le Roi No. 2, Ltd., at Rossland.

(Continued next month.)



NOTICE.

NOTICE is hereby given that the Order-in-Council, approved August 17th 1895, reserving and setting apart for the sole use of Her Majesty's Government for military and naval purposes that portion of the Sand Spit at the Lagoon, Esquimalt, which is the property of the Province, is rescinded; and that the lands described in the afore-said Order-in-Council are reserved for Government purposes.

ROBT. A. RENWICK,

Deputy Minister of Lands.

Lands Department,

Victoria, B. C.

29th October 1912.

nov. 2

feb. 2



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing by reason of the notice published in the British Columbia Gazette of December 27th, 1907, is cancelled in so far as the same relates to the following described lands, so as to permit of the sale of the timber standing thereon:—

"That portion of Lot No. 524, Group, 1, New Westminster District, not covered by Lot No. 1650 or the South Half of Lot. No. 1651, Group 1, New Westminster District

Commencing at the north-west corner of Lot No. 2635, New Westminster District; thence north 14 chains and 70 links; thence west 14 chains and 41 links, more or less, to the east boundary of Lot No. 781; thence south 3 chains and 50 links to the south-east corner of said lot; thence west 2 chains and 59 links to the fractional north-east corner of Lot No. 829; thence south along the easterly boundary of the said lot 26 chains and 50 links to a post marking an angle of the said lot; thence east along the boundary of the said lot 17 chains, more or less, to a fractional north-east angle of said lot; thence north along the west boundary of Lot No. 2635 a distance of 15 chains and 30 links, more or less, to the point of commencement; containing by admeasurement 50 acres, more or less.

Commencing at a post on the west shore of Adams Lake, Kamloops District, which post is situated 7 miles and 73 chains north and 42 chains east of the north-east corner of Section 30 Township 25, Range 11, west of the 6th meridian; thence west 16 chains; thence north 80 chains; thence east 32 chains, more or less, to the shore of Adams

Lake; thence southerly along the shore of Adams Lake to point of commencement; containing by admeasurement 193 acres, more or less.

Commencing at a post planted on the east shore of Adams Lake, Kamloops District, which post is situated 5 miles and 44 chains north and 1 mile and 36 chains east of the north-east corner of Section 30, Township 25, Range 11, west of the 6th meridian; thence 20 chains east; thence 60 chains south; thence 10 chains west; thence 20 chains south; thence 20 chains west; thence 20 chains south; thence 44 chains west to the south shore of Adams Lake; thence northerly along the shore of Adams Lake to point of commencement; containing by admeasurement 283 acres, more or less.

Commencing at a post planted on the east shore of Adams Lake, Kamloops District, which post is 61 chains north and 83 chains west of the north-east corner of Section 30, Township 25, Range 11, west of the 6th meridian; thence 78 chains east; thence north to the south-west corner of Lot No. 1831; thence north along the west boundary of said lot and continuing north for a total distance of 198 chains in latitude from the point of commencement; thence west 6 chains to the shore of Adams Lake; thence southerly along the shore of Adams Lake to the point of commencement; containing by admeasurement 970 acres, more or less.

Commencing at the most northerly north-east corner of Lot No. 768, New Westminster District; thence east 40 chains; thence south 40 chains; thence east 40 chains; thence south 20 chains to an angle of said Lot No. 768; thence westerly and northerly along the boundaries of said lot to the point of commencement; containing by admeasurement 280 acres, more or less.

Commencing at the north-east corner of Lot No. 570, New Westminster District; thence south along the east boundary of said Lot No. 570 20 chains, more or less, to the north-west corner of T.L. Lot No. 32451; thence east 40 chains; thence north 20 chains; thence west 20 chains, more or less, to the south-east corner of Lot No. 569; thence west 20 chains, more or less, along the south boundary of Lot No. 569 to the point of commencement; containing by admeasurement 80 acres, more or less.

Commencing at the north-east corner of Lot No. 2849, Redonda Island, New Westminster District; thence east 13 chains; thence north 4 chains; thence east 19 chains; thence south 25 chains; thence west 32 chains, more or less, to the east boundary of Lot No. 2849; thence northerly along the east boundary of said lot to the point of commencement; containing by admeasurement 75 acres, more or less.

Consisting of an Island in Goat River, lying immediately to the south of Lot No. 491, Group 1, Kootenay District; containing by admeasurement a total of 38 acres, more or less.

ROBERT A. RENWICK,

Deputy Minister of Lands.

Department of Lands,

Victoria, B.C., December 11th, 1912.



TIMBER SALE. No. X9.

SEALED TENDERS will be received by the Minister of Lands not later than noon on the 3rd day of March, 1913, for the purchase of Licence No. X9 to cut 45,300,000 feet of timber and 4,000 cedar poles standing on Lot 671, Malaspina Strait, New Westminster District.

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CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing over Lot 1340, Range 1, Coast District, by reason of the notice published in the British Columbia Gazette of the 27th of December, 1907, is cancelled, for the purpose of permitting the Davidson-Ward Company, Limited, to purchase the said lot.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B. C.,
19th December, 1912.



HIS HONOR the Lieutenant-Governor in Council has been pleased to appoint Messrs. H. C. Parson, of Golden; A. M. Harper, of the City of Vancouver; J. A. McKelvie, of the City of Vernon; R. A. Stoney, of the City of New Westminster; and John Jardine, of the City of Victoria, to be Commissioners under the "Public Inquiries Act" to enquire generally into labor conditions in the Province, and particularly the contracts and relations between employers and employees, the hours of labor, the conditions surrounding the employees during their employment, and the time and manner of payment of wages in mines, smelters, canneries, shops, factories, logging and railway construction camps, or in any other work and on tramways; the working and enforcement of the "Truck Act," the "Master and Servant Act," the "Deceived Workman Act," the "Woodman's Lien for Wages Act," and any other legislation affecting labour, the precautions taken for the protection of life, the preservation of the health and the prevention of unsanitary conditions.

The Commissioners will hold their first meeting at the Parliament Buildings on Saturday, the 28th day of December instant, at 10 o'clock in the forenoon, of which all persons interested are hereby to take notice and govern themselves accordingly.

Provincial Secretary's Office,
12th December, 1912.

FOR SALE

Three 125-ton copper smelting furnaces. Four Cornersville blowers, capacity, 752 cubic feet per revolution, direct connected to Erie engines. Three converter stands and fourteen shells. 84 x 126, for electric drive.

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The Canadian Copper Company
Copper Cliff, Ontario.



NOTICE is hereby given that meetings of the Provincial Labor Commission will be held at the following places:—

Victoria—Tuesday and Wednesday, January 14th and 15th, in the Maple Committee Room of the Parliament Buildings, at 10 a.m.

Vancouver—Friday and Saturday, January 17th and 18th, Court House, 10 a.m.

New Westminster—Monday, January 20th, Court House 10 a.m.

Kamloops—Wednesday, January 22nd, Court House, 10 a.m.

Salmon Arm—Thursday, January 23rd.

Revelstoke—Friday, January 24th, Court House, 10 a.m.

Other meetings will be announced later.

The Commission will hear evidence on all matters affecting labor conditions in the Province. All persons interested are invited to be present.

H. G. PARSON,
Chairman.

F. R. McNAMARA,
Secretary.



LABOR COMMISSION

SITTINGS of the Provincial Labor Commission will be held as follows:—

Nanaimo—Monday, February 17th, at 8 p.m., Court House.

Cumberland — Wednesday, February 19th, at 8 p.m.

Alberni—Monday, February 24th, at 8 p.m.

Ladysmith—Tuesday, February 25th, at 3.30 p.m.

Steveston—Monday, March 3rd, at 2.30 p.m.

Chilliwack—Tuesday, March 4th, at 2.30 p.m.

New Westminster—Thursday, March 6th, at 11 a.m., City Hall.

Vancouver—Friday, March 7th, at 10 a.m., Court House.

The Commission is empowered to inquire into all matters affecting the conditions of labor in British Columbia. All persons interested are invited to attend and give evidence.

H. G. PARSON,
Chairman.

F. R. McNAMARA,
Secretary.

This year some work will be done on an asbestos claim near Okanagan Falls.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing on Lot 10 Group I, Kootenay District, by reason of a notice bearing date March 26th, 1888, and published in the B. C. Gazette under date of March 31st, 1888, is cancelled for the purpose of offering the said land for sale at public auction.

ROBT. A. RENWICK,
Deputy Minister of Lands.

nov. 30

mar. 1

THE PACIFIC COLLIERIES, LTD.

A Victoria despatch of the 31st ult. says:—

It is announced that arrangements have been completed by which more rapid development of the properties of the Pacific Coast Coal Mines, Ltd., will be secured by the formation of a holding and financing company known as the Pacific Coast Collieries, Ltd. This company has been incorporated by Federal letters patent and has a capital of \$1,500,000 of 6 per cent. preferred stock and \$3,500,000 ordinary stock. scribed and \$250,000 of the ordinary will be kept in the treasury.

The financing of the company has been undertaken by the Canada Securities Corporation, Ltd., the Pacific Coast Coal Mines, which has been operating its mines at South Wellington, has also been engaged for two years past in sinking two shafts for the opening up of its properties beside the Nanaimo River in Cedar District between South Wellington Mines and Boat Harbor. The main shaft is down about 560 feet. with the expectation of striking coal within the next 30 feet. As a result of the new financial arrangements the company will be able to complete the equipment of this mine to materially add to its railway equipment and to build a much-needed addition to the wharf at Boat Harbor. These improvements will cost about \$250,000. The company has also proceeded with its development of the Suquash coal area at the north end of Vancouver Island. There are several miles of underground work with sufficient development to enable the company to mine 600 tons a day. Before the end of 1913 it is expected that the company will have these mines fully equipped and in active commercial operation at a cost of \$500,000.

It is also announced that Mr. C. C. Michener, who has been president and managing director, will resign his post as managing director on January 1, and will be succeeded by Mr. J. H. Tonkin of Wilkesbarre, Pa. Mr. Michener has large interests also in Oregon and Washington and will give them his attention in detail, removing to Portland, but retaining his connection with the various Canadian companies in which he is interested.

LYNN CREEK ZINC MINES, LTD.

Good progress has been made in development work on the property of the Lynn Creek Zinc Mines Limited. The report of the engineer to hand as we go to press shows that the No. 2 Adit has been advanced over 90 feet since Christmas. This adit is now in about 135 feet, and in good ore all the way. The width of the vein at this point cannot be determined until a cross-cut is made as no foot wall has yet been encountered, the adit following what is believed to be the hanging wall of the vein.

NEW MACHINERY INSTALLATION

The Dominion Coal Company are to install at their new coal docks at St. John, N. B., four vertical submerged tubular boilers, built for 150 pounds' working pressure by the International Engineering Works, Ltd., manufacturers of Robb engines, boilers, etc.

PULP AND PAPER MAGAZINE OF CANADA.

The New Year number of this magazine, published by the Industrial and Educational Press Ltd., Toronto, has just come off the press in its enlarged size, and will hereafter appear twice a month, instead of monthly as formerly. This is the first number from the pen of the new editor, A. G. McIntyre, formerly chemical engineer for Price Bros. & Co., Ltd. Mr. McIntyre is a graduate of Acadia University in Arts and Science, and McGill University in Chemical Engineering, and joins this magazine after a wide engineering and paper mill experience.

The year's progress and development are fully reviewed in this number, and many valuable articles are contributed.

Mr. H. S. Ross, K. C., of Montreal, writes an able and exhaustive resume of the Workmen's Compensation Act of Quebec, with references to those of other countries.

John Norris, of the American Newspaper Association, has a timely write-up on the matters of interest in the newsprint world.

The new mills of Price Bros. & Co., Ltd. are fully described in an elaborate illustrated article by the editor. The new development of utilization of wood waste for gas producers is discussed by E. B. Archibald, B.Sc., of Montreal.

Mr. R. H. Campbell, the able director of the Forestry branch, outlines the Dominion forestry policy.

The Canadian water powers, timber regulations, pulp and paper tariffs, exports and imports, and the entire condition of the trade and its many ramifications are thoroughly dealt with. All this, with the numerous specially contributed technical articles for pulp and paper mill men, combine to make the "Pulp and Paper Magazine" a true ful-

filment of its heading, "A magazine devoted to the science and practice of the manufacture of pulp and paper with up-to-date news of the allied trades."

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Address

The Canadian Copper Company
Copper Cliff, Ontario.

MACHINERY ORDER.

The Canadian Car & Foundry Co. have recently purchased for their new car shops at Fort William, Ont., a 375 h.p. Robb vertical two-crank compound engine for direct connection to a 250 k.w. electric generator. This engine, the latest design of Robb vertical compound engines, is to operate at 360 revolutions per minute. It is being built by the International Works, Ltd., manufacturers of Robb engines, boilers etc.

The Montreal office of the International Engineering Works, Ltd., builders of Robb engines, boilers, etc., has been changed to

No. 1001 Transportation Building
Montreal.

INDEX

Subject	Page
Further Particulars of B. C. Mining	
In 1912	5
Nelson Mining Division	5
Boundary District	9
Similkameen and Nicola	11
Bridge River, Lillooet	12
The Coast District	12
The Britannia Mine and Concentration by Flotation	13
Unit Costs at B.C. Copper Co.'s Mine	15
Consolidated Company's New Assay Office	15
The Hedley Gold Mining Company's Operation In 1912	16
Granby Consolidated Resumes Dividends	17
Hazelton Camp's First Ore Shipments	18
December Report of Van Roi Mine..	19
December Report of Le Roi No. 2...	19
Our Dividend-Paying Mines	19
Camp Hedley and Certain Advertising	19
Editorial	20
Latest Metal Markets	21
Progress at Portland Canal.....	22
Annual General Meeting of Portland Canal Mining Co.	23
The Vancouver Assay Office.....	24
Report of Board of Conciliation on Kootenay Metal Mines	24
Development Work Commences at Aubeas Mines	26
Personal and General	27
The Pacific Collieries, Ltd.	30
The Lynn Creek Zinc Mines, Ltd....	31
The Stock Markets	32
Production of Iron Ore In Canada...	33
The World's Gold Production.....	34
Review of Annual Issue of "Money Times"	35

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MINING STOCK QUOTATIONS.

Supplied by Waghorn, Gwynne & Co., Stock-Brokers, Vancouver, B.C.

LISTED STOCKS.

Spokane.		Bid.	Asked.
Ajax .....		.08½	.17
Alameda .....		.00½	.01
Alhambra .....		.04½	.10
Ambergris .....		.05	.07½
Am. Comdr .....		.00½	.01½
B. C. Copper	4.25	4.50	
Black Horse .....	.01½	.02½	
Bullion .....	.01	.02	
Bullwhack .....	.48	.52	
Caledonia .....	.23½	.26	
Canadian Cons.	45.00	75.00	
Carbonate Hill .....	.01½	.04	
Copper King .....	.02½	.02½	
Copper King (Che.) ..		.28	
Federal, pref.	42.00	51.00	
Federal, com.	16.00	23.00	
Gertie .....	.95	.06½	
Granby Smelter	68.00	70.00	
Happy Day .....	.01		
Hecla	2.20		
H. E. M. ....	.07½	.09½	
Hypothek .....	.02½	.02½	
Idaho Giant .....	.01½		
Idora Hill .....	.02	.02½	
International C. & C. ..	.37	.41	
Jack Walte .....	.07½	.09	
Laclede .....	.01	.03	
Lucky Calumet .....	.01½	.02½	
Lucky Jim .....	.13½	.17	
Marsh .....	.22½	.26½	
McGillivray C. & C. ....	.15	.18½	
Missiona Copper .....	.02	.02½	
Monitor .....	.01½	.02½	
Moonlight .....	.04½	.01½	
Nabob .....	.01½	.03	
Nugget Gold Mines .....	.25	.35	
Oom Paul .....	.01	.02	
Puritan .....	.13½	.19	
Rambler-Cariboo .....	.85½	.90	
Rambler Cariboo Ext. ....	.04	.05½	
Silver Cable .....	.02½	.05½	
Snowshoe .....	.01½	.02½	
Snowstorm .....	.39	.45	
Standard S. L.	1.35	1.47	
Stanley .....	.03½	.04	
Stewart	1.92	1.97	
Tamarack Con.	1.25		
United Copper .....	.60	1.00	
Utica .....	.16	.19½	

Industrials

	Bid.	Asked.
Wash. Water Power Co. ..	133.00	136.50
Western Union Life	135.00	145.00
Interstate Con. Tel.	20.00	
Tamarack and Custer	1.01	1.26

Cobalt Stocks

	Asked.	Bid.
Balley .....	.09½	.09½
Beaver Consolidated .....	.40½	.39½
Buffalo	2.30	2.10
Chambers-Ferland .....	.29	.28½
Great Northern .....	.09	.07½
City of Cobalt .....	.39	.38½
Coniagas	9.25	9.10
Crown Reserve	3.65	2.58
Foster .....	.11	.09½
Gnfford .....	.06½	.06
Gould .....	.03½	.03½
Green Meehan .....	.01½	.01½
Hargrave .....	.08½	.08
Kerr Lake	3.20	3.00
La Rose	2.85	2.72
Little Nipissing .....	.01½	.01½
Mc Kin. Dar. Savage	1.98	1.97
Nipissing	9.15	9.00
Opplr .....		.04
Otis .....	.02	.01½
Peterson Lake .....	.25½	.25½
Rochester .....	.04½	.04
Right of Way .....	.08½	.08
Silver Leaf .....	.04½	.04
Temiskaming .....	.34	.33½
Trethewey .....	.34	.32½
Wettlaufer .....	.15	.15

Porcupine

	Asked	Bid
Crown Charter .....	.00½	.00½
Dome Extension .....	.06½	.06
Foley O'Brien .....		.16
Hollinger	15.50	16.15
Jupiter .....	.37	.36
North Dome .....	.60	
Pearl Lake .....	.30	.29½
Porc. Imperial .....	.02½	.02
Preston East D. ....	.04	.03½
Rea Mines .....		.15
Swastika .....	.10	.09½
Vipond .....	.20	.19½

Sundry

C. G. F. S. ....	.05	.04½

VANCOUVER STOCK EXCHANGE.

Listed Stocks.

	Bid.	Asked.
Alberta Canadian Oil ..		.02
Alberta Coal & Coke ..		.02
International C. & C. ..	.37½	.40
Portland Canal .....		.03
Western Coal & Coke ..	1.50	
Dominion Trust Co.	120.00	126.00
Great West Perm. (A) ..	123.00	127.00
Nugget Gold Mines .....	.35	.40
Van-Nan. Coal		1.50
Vancouver Dev. Co.	11.00	

Unlisted Stocks.

Red Cliff Mining .....		.06
Amal. Dev. ....	.00½	.00½
American Canadian Oil. ....	.02½	.05
Canadian Pacific Oil ..	.05	.07
B. C. Copper	4.25	4.50
Granby	68.00	69.75
Kootenay Gold .....	.11	.19½
Rambler Cariboo .....	.81	.95
Lucky Jim Zinc .....	.11½	.16
Royal Collieries .....		.02½
Standard Lead	1.30	
B. C. Refining Co. ....	.40	.55
Stewart Land		12.00
B.C. Perm. Loan A xd.	130.00	
B. C. Trust Co.		160.00
National Finance xd.		135.00
Northern Crown Bank ..	97.00	
B. C. Telephone, com.	108.00	
Pacific Loan Co.	26.00	
Prudential In. Co. xd.	108.00	
S. A. Scrip	500.00	

THE REAL DOPE

(Greenwood L d.c.)

A most amusing incident is just to hand from France. The famous Albi glass works, owned and run by the workpeople themselves, are the scene of a strike! The story is this: The works were purchased in 1896 for \$60,000 by the Socialists and handed over bodily to the workpeople. At first all went well; then Socialism began to find its feet. The old hands started to exploit the newcomers with all the ferocity of hardened capitalists. Men

began to take holidays when and as they chose. The output diminished and the revenue decreased. Then the Paris committee, in whom the works are vested, stepped in and tried to restore order out of chaos, by regulating wages and hours of labor, while the men were informed that the habit of knocking off work as the fancy took them was detrimental to the interests of the concern, and could not be tolerated. Could free born Socialists lie down under this impertinent interference with their liberties? Never! They went on strike and extinguished the four furnaces! It will cost something like \$10,000 to start them again, and when the workmen get tired of twiddling their thumbs and come back to work this sum must come out of their pockets. And this is Socialism in practice!

See Special Inducement
to New Subscribers on
page 39 of this issue

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PRODUCTION OF IRON ORE IN CANADA.

The "Monetary Times," in a recent issue, says—:

There has been a rapidly growing demand for iron and steel products in Canada during the past few years, accompanied by a corresponding increase in the output of Canadian iron and steel furnaces, although this output probably supplies not more than 50 per cent. of the tonnage of iron and steel consumed. The increase in production was continued during 1911, notwithstanding abnormally low prices received for pig iron and steel products, states in the latest report Mr. J. McLelsh, chief of the division of mineral resources and statistics. Manufacturers, generally, report a very strong demand, but claim that business has been carried on with a very low margin of profit in order to meet prices quoted on imported products.

At the same time extensive preparations are being made to increase the output and supply a larger proportion of the home market.

The total shipments of iron ore in 1911 from mines in Canada were 210,344 tons whereas blast furnaces consumed 1,695,802 tons, and steel furnaces 12,892 tons. The shipments from iron ore mines in 1911 were the lowest recorded in twelve years. The production of pig iron was 917,535 short tons, and of steel ingots and castings, 882,396 tons.

The rate of production of iron ore has shown practically no increase during the past twelve years, while the present production of pig iron is nearly ten times that of 1900. About six per cent. only of the iron used in Canadian blast furnaces during 1911 was of domestic origin. Of the coke used, 52 per cent. was either imported or made from imported coal, and 22 per cent. of

the limestone flux used was from sources outside of Canada. In each instance the proportion of imported raw material used is higher than was the case in 1910.

The total production of iron ore in Canada to the end of 1910 has probably not exceeded 5,500,000 tons, while the total consumption of ore in iron and steel blast furnaces since 1886 has been over 13,500,000 tons. During 1911 the tonnage of imported ores used was 1,628,368 tons, which was derived chiefly from Newfoundland and the south shore of Lake Superior.

The assistance granted by the Federal Government to the iron and steel industries in the form of bounties ceased on December 31, 1910, with the exception of the bounty on steel rods, which was continued to June 30, 1911, and the bounty on pig iron and steel made in electric furnaces, which was available to the end of last month.

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THE WORLD'S GOLD PRODUCTION

A Washington (D.C.) despatch of the 2nd inst., says:—

The world's production of gold during 1912 was \$5,500,000 greater than in 1911, the total having been \$465,000,000 according to a preliminary estimate announced by George E. Roberts, director of the mint. Gold production in the United States amounted to \$91,685,163 compared with \$96,890,000 in 1911. California led with \$19,988,486; Colorado was second with \$18,791,710; Alaska third with \$17,398,946; Nevada fourth with \$13,333,680 and South Dakota fifth with \$7,795,680. Of the world's production the Transvaal and Rhodesia made a gain of about \$20,000,000 and Canada gained nearly \$3,000,000. The United States, Mexico and Australia last about \$16,000,000, and in the rest of the world the production was about what it was last year. Since 1908 when the production of gold in the world was \$442,475,000, the annual increase has been comparatively small.

The mint service of the United States during the year sold \$38,000,000 worth of gold bars for consumption in this country and Canada, as against \$35,000,000 in 1911. The net consumption of new gold including coin for such uses in the United States and Canada was about \$35,000,000 and in the world's, excluding Asia, probably between \$100,000,000 and \$115,000,000.

The absorption of gold by India, which has been attracting attention for some years, was again a notable feature. The net imports of India in 1909 were approximately \$50,000,000, in 1910, \$90,000,000; in 1911, \$116,000,000 and in 1912 approximately \$140,000,000.

The movement of silver to India also continues to be very heavy. The importations of silver in ounces during 1912 have been exceeded only once in the history of India—in 1906.

The increase of gold in the monetary's stock of the United States in 1912 was approximately \$90,000,000. The gold holdings of the United States treasury increased about \$70,000,000, chiefly in bullion represented in the circulation by certificates.

REPORT OF MOUNTED POLICE

The report of the Royal Northwest Mounted Police for the year 1912 was tabled in the house last week by Mr. Borden.

The report shows that on September 30 the strength of the force consisted of 54 officers and 800 non-commissioned officers and constables, an increase of four officers and 20 men, compared with the force for the year ending September 30, 1911.

During the year 13,391 cases were entered by the police. Of these 11,435 resulted in convictions; 1307 were dismissed or withdrawn, and 249 were awaiting trial on September 30. Compared with the previous year these figures show an increase of 3973 cases and an increase of 360 convictions.

The cases include 30 murders, 17 in Alberta, 12 in Saskatchewan and one in the Yukon; 21 cases of attempted murder, eight in Saskatchewan and 13 in Alberta, and eight manslaughter cases, two in Saskatchewan and six in Alberta. In 21 of these cases convictions were secured, and on September 30 17 remained to be tried. The report sets forth that in proportion to population there is little increase, and the same result will be obtained if compared with statistics for 12 years.

Another interesting comment in the report is that the names of the accused indicate an undue proportion of our alien population as responsible for these crimes of violence, and the West is paying the penalty for drawing a large immigration from Central Europe.

Commissioner Perry refers to changed conditions in Saskatchewan and Alberta, which in his opinion calls for a reconsideration of the agreement between the two provinces and the Dominion. He points out that under the agreement of 1906 a force of 250 men was to be kept in each province. Since that time, however, the population had enormously increased and a heavy strain was put on the force in consequence.

MORE DEADLY THAN THE MALE.

The enterprising female who was formerly assistant secretary to the Vancouver School Board, confesses that she padded the pay roll to the extent of \$31,000 and spent it. Suffragettes will be able to point to this as another proof of female competency.—"Ottawa Journal."

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LLOYD GEORGE'S COUNTRY SEATS

A London (Eng.) despatch of the 6th inst., says:—

"The National Review," one of the chief Unionist organs, questions in its January issue, Mr. Lloyd George's right to continue to pose as the champion of the poor. The writer of the article says:

"There are abundant signs that Mr. Lloyd George is increasing in affluence and can now be counted among radical plutocrats. His son has entered the same immensely wealthy and prosperous firm as the ex-Master of Elibank. The Chancellor of the Exchequer drives a luxurious motor like that affected by the wicked rich. He plays golf and sacrifices pheasants to sport; goes to balls like the veriest lord. He is building a house on such a scale that he will seem to be as well provided with country seats as any duke. He is not content with his handsome official residence at No. 2 Downing Street. One lately abode has risen at Criccieth, that he may take the sea air in his Welsh village which his very presence renders illustrious.

"Another pleasure house is being completed on Walton Heath so that he may indulge his proclivities for the royal and ancient game. The trade of demagogue must indeed be profitable.

"And with all these houses and all this money, how dare he face the poor? He said at Cardiff in December, 1911: 'We have greater poverty in the aggregate than we have ever had. There is more severe economic bondage. There are millions of men, women and children in this richest country in the world, who, through no fault of their own, go through life sodden in poverty, wretchedness and despair.'"

"Yet Mr. Lloyd George still callously continues to draw his \$24,000 a year, to which, by his own confession, he has no right, and instead of spending it in alleviating this poverty, wretchedness and despair, spends it in building 'seats' for himself."

WELL-KNOWN UNITED STATES
SENATOR STRONGLY DENOUNCES
INITIATION AND REFERENDUM

A despatch from Washington (D. C.), under date of the 2nd inst., goes to show that at least one member of the U. S. Senate is not afraid to denounce the vicious principle of the initiative and referendum. This man is Senator Joseph W. Bailey of Texas.

Senator Bailey's speech was an attack on the principles of the initiative and referendum as institutions that would, if adopted, bring about the overthrow of the present system of American government. He declared they originated in the desire of politicians to escape the responsibility for action on such petty questions as the location of state capitals and the settlement of prohibition fights. As institutions of government, he declared that the schemes for direct legislation by the people would convert the United States from a republic into a democracy and would give its control into the hands of the unskilled, the idle and the vicious.

PETITIONING FOR THE CANTEN

The recent movement for the restoration of the army canteen is pretty strong. Mrs. Alice Burbank, representing the wives and daughters of the enlisted men of the army, brought last week to the house committee on military affairs a petition for it signed by 23,000 women. Secretary Stimson bears witness that since the canteen was abolished the health of the army "has gone from bad to worse": Surgeon-General Torney estimates from statistics that alcoholism has increased 100 per cent. since the canteen was abolished. "There is no army in the world," he says, "which has such a bad health record as the American army."

There seems no room for doubt about the effect of the abolition of the canteen on the morals and health of the army. Has not this experiment now gone far enough?—"Harper's Weekly."

The financial men of Europe are looking towards British Columbia for mining investments, remarks R. T. Lowery in the "The Ledge." This province will soon be producing more minerals than any other part of the British Empire.

The Princeton Coal and Land Company are shipping on an average of seven cars daily, and the coal is giving very good satisfaction among many new consumers at the Coast. When there are improved railway facilities the Princeton Coal and Land Company will be obliged to increase the present output immensely—"Similkameen Star."

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USE OF INCANDESCENT IN MINES

Electric incandescent lamps are used in a large number of mines. When properly installed they offer ordinarily only a small fire risk. The presence of explosive mixtures of gases, however, increases this risk. When a lamp bulb is broken in an explosive mixture of gas this mixture is brought into violent contact with a wire having a temperature of 1800 to 2000°C or two to three times the ignition temperature of methane. The American Bureau of Mines made a number of practical tests, and 1,219 lamps, made by eight manufacturers, were used, on natural gas from the Pittsburg city mains, which contains 82 per cent. of methane, 16.4 per cent. of ethane, 1.5 per cent. of nitrogen and a trace of CO₂. The most explosive mixture of this natural gas and air contains 8.6 per cent. of gas. Out of the tests made under various conditions of voltage, and breakage, there were 96 ignitions of gas, the percentage being 100 in many cases.

LARGE VS SMALL DRILLS

Adoption of small drills, which can be handled by one man for mining in the Calumet and Hecla properties is being imitated by the other companies in the Lake Superior district and it is prophesied that within a short time their use will be almost universal says the "Mining and Scientific Press."

Eastern market journals acclaim the change as "revolutionizing ground breaking" quite oblivious to the fact that a similar revolution has been in progress in Western mining districts for many years, without producing any startling upheavals. Whether large or small drills give better results depends largely on the use to which they are to be put. That small drills cannot

do as much work as large in shaft-sinking or tunnel-driving, for example, is as evident as that small drills are better than large for stoping, especially in narrow veins. Striking the best balance between mechanical horse-power and human energy required is a problem of management. Where it is desirable to use a rather light drill it is obviously better to make it light enough for one man to handle, rather than employ two men for work which is but little beyond the power of one. It will be remembered that the long strike at Rcefton, in New Zealand, was the result of the refusal of the miners' union to allow a single man to handle a drill, but the demand of the men was so obviously unreasonable that they were unable to enforce it. Considerable economy in mining costs has resulted from the use of the "one-man" drill elsewhere, and there is every reason to believe that equally good results will accrue in the copper mines of Lake Superior.

A HARDY ANNUAL

The biggest and best annual number of "The Monetary Times" has just been published, containing a statistical and general review of the past year in Canada and a wealth of opinions as to the outlook for the coming year. The leading feature is a series of articles, especially written for this issue by representative residents of Great Britain, the United States, France, Germany, Holland, Denmark, Japan, Argentina, and other countries. These stories and their editorial preface show how Canada is elbowing its way into the international arena.

The premiers of the Dominion again contribute a message respecting the past year and the outlook for 1913 in their respective provinces. Among the numerous other prominent contributors

are Sir Edmund Walker, Sir Edmund Osler, M. P., Honorable W. H. Hearst, Professor O. D. Skelton, Mr. W. R. Lawson of London; Sir William Whyte, Mr. N. W. Harris of Boston; Mr. F. Williams Taylor of London; Mr. Henry Clews of New York; Mr. A. Barton Hepburn of New York; Mr. George E. Drummond; Mr. C. R. Hosmer, Colonel Sir Henry Pellatt, Mr. R. S. Gourlay, Sir George Ross, Honorable J. Barrett of Washington, Mr. J. L. Englehart, and Honorable P. T. McGrath.

The issue contains a review of banking in Canada for the past 43 years, discusses the prospective rise in bank dividends, the securities market during the past year, and the outlook in the money markets. A further article in the banking section compares the Canadian and the United States banking systems. Other articles tell what an annual statement should contain, the relation of Canadian loan companies and European mortgage banks, of Canada's stock of gold and silver, and of banking facilities and the Western crop.

The bond section reviews the bond issues of the Dominion for the past seven years and has an attractive article by a Parisian on how to appeal successfully to the French investor. Mr. N. W. Harris of Boston foretells certain changes in the bond investment situation. In the same department of "The Monetary Times" annual, Mr. F. Williams Taylor shows how the maintenance of our credit in London is vital, while Mr. J. G. Colmer, C. M. G., emphasizes the point that a half or one per cent. additional interest rate now carries the day in the London market. Bond and stock issues in Canada, Dominion and Provincial government and municipal bond sales are treated in interesting articles and by unusually complete statistics.

Every section of the Dominion is well represented. A prominent citizen of Victoria pleads for a shipbuilding industry in Canada. Vancouver men inspire faith in the future of British Columbia generally. The prairie provinces are discussed by men who have grown with them, and every phase of Western growth, agriculture and prosperity is treated by those with expert knowledge. To the iron and steel industry in the maritime provinces is devoted a special article, and there are various stories dealing with development in Eastern Canada generally.

A special article on Canada's opportunity in the Panama Canal is contributed to "The Monetary Times" annual by the Honorable J. Barrett, director-general of the Pan-American Union. The loaning situation is dealt with by a prominent Western loan authority and by the representatives of Dutch companies which have recently become interested in that field. The insurance section is replete with articles of great interest to life, fire and miscellaneous insurance men. There is also a summary of the British National Insurance Act which went into force last year. An article is contributed on surety companies and their relation to Canada's grain trade. Policy-holders, prospective and actual, will be interested in a dozen questions on life insurance answered by a man who has been in that

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business all his life. How to guard against defalcations is another story in the insurance section which will interest others than insurance men.

The depopulation of rural Ontario is deplored by Sir George Ross, in a striking article, and he and another writer suggest a possible solution to the problem. There are several articles on railroad transportation, and Mr. R. H. Coats of Ottawa, writes on prosperity and commodity prices.

Trade and commerce, industrial life, natural resources, investments, finance and other kindred subjects are treated exhaustively in "The Monetary Times" annual, which contains 288 pages, and more than 70 contributed articles by prominent citizens of this and other countries. The issue is well indexed

and will prove not only of immediate interest but of great reference value.

A story which will interest investors everywhere is contributed by a lady investor, who in 16 years has made 2,400 per cent. on her original investments.

THE GOOSE AND THE GANDER.

It is a funny thing that anything imperialistic in its tendency that may originate in Canada, unless it may happen by the merest chance to have had its origin with a Liberal, is sure to meet the malignant opposition of many Liberals in the Canadian House of Commons, says the "Hedley Gazette" of the 30th inst., in an able editorial on one of the recent unpleasant exhibitions in

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PART IV. The Examination of Fossils.—Introductory. Fossil Generic Types, Rhizopoda. Polyzoa. Lamellibranchiata. Scaphopoda. Echinodermata. Arthropoda, etc. Suggested list of Characteristic Invertebrate Fossils. Index.

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the Dominion House. The tendency to sneer at and belittle all things British has become so much a fixed habit with a lot of them that they do not seem to be able to help it. So deep-rooted does the sentiment appear to be that on the very slightest provocation it is sure to break out, and where providence neglects to supply the provocation it will break out anyway. An instance of this was seen in the House of Commons the other day when Foster's bill to give effect to the West Indies trade agreement was up for its second reading. A. K. McLean of Nova Scotia, a prominent member on the opposition benches and an erstwhile Cabinet Minister in the Nova Scotia Provincial legislature, left no reason to doubt his antipathy to Englishmen in his attack on the Unionist party in Great Britain. Until Hansard comes to hand to reveal the connection which he was led to make his attack the public will continue to be mystified, for there was nothing in the meagre press reports of the occurrence to give any clue by way of justification. He denied the Unionists any right to interest themselves in Canadian affairs or to express any opinions thereon and "travelling Englishmen" who dared to speak of Canada were to beware henceforth of his wrath. It would be interesting indeed to know wherein the Unionist offended. And it would be likewise interesting to know why he had no word of condemnation of the action of Premier Asquith in espousing the cause of reciprocity with

the United States to help Laurier when that question was an issue before the Canadian electors. In view of what Taft has revealed concerning that question since the Canadian electorate have spoken it is now up to Asquith to give some explanation of his interference on that question, and if the Unionists of Great Britain were of the same kind of petty politician as A. K. McLean they would have made inquiry ere this in a form that would compel Mr. Asquith to acknowledge his error and express his regret for having spoken as he did. As for Mr. McLean, before he has any further rebuke for the Unionists along the lines he indicated he should remember Sir John Macdonald's paraphrase of the old proverb which reads: "What is sauce for one gender of a certain animal should be sauce for another gender of the same animal," and try to discipline his own allies across the water.

There are 2,500 men working on the Grand Trunk Pacific east of Hazelton, and more men coming in daily. The grade to Telkwa will be finished this month.

More than \$50,000 worth of gold is shipped from Greenwood every month, and no real estate booster has ever mentioned this fact, remarks the "Ledge" of that city.

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2 08	3 10	7 53	1 Hillside Ave.....	6 22	10 45	
2 20	3 25	8 05	6 Royal Oak	6 10	10 20	
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2 30	3 40	8 15	9 Elk Lake	6 00	10 00	
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The British Columbia Mining Exchange

AND ENGINEERING NEWS

VOL. XV.

VANCOUVER, B.C., FEBRUARY, 1913.

No. 2

Western Branch of Canadian Mining Institute

Fourteenth General Meeting of Western Branch of Canadian Mining Institute Is Held at Nanaimo — Good and Representative Attendance — Many Interesting Papers—Coal Mining Industry a Leading Feature

The fourteenth general meeting of the Western Branch of the Canadian Mining Institute was held at Nanaimo on March 4 and 5. As the printing of this number of the "British Columbia Mining Exchange" has unavoidably been delayed until after the holding of the meet-

to the chair, and presided at the several sessions held.

The chairman briefly welcomed the visitors who had come from Seattle and other parts of the neighboring State of Washington, and those from Vancouver and Victoria, and expressed the

I believe a formal address of welcome will be extended you this evening by our worthy mayor. While the attendance this afternoon is not large this is a representative gathering and we will try and entertain you during your visit to Nanaimo. Although the fact is gen-



Bear Lake, En Route to Surf Inlet Gold Mines, Princess Royal Island, B. C.

ing it is thought well to publish the following account of the meeting in this issue rather than delay printing it until next issue.

Chief Inspector of Mines Presides.

In the absence from the province of the chairman of the branch, Mr. M. E. Purcell, of Rossland superintendent of the Consolidated Mining and Smelting Company of Canada's Centre Star-War Eagle group of mines—who had gone to Ottawa to there attend the annual meeting of the Institute, Mr. Thomas Graham of Victoria, chief inspector of mines for British Columbia, who is a member of the branch council, was voted

hope that the meeting of the branch would be interesting and instructive as, from the programme before him, he had no doubt it would be. He then called upon Mr. Thomas R. Stockett, of Nanaimo, general manager of the Western Fuel Company, owning and operating several coal mines in the immediate vicinity of Nanaimo, for an address.

Mr. Thos. R. Stockett Addresses Meeting

Mr. Stockett, whose membership in the Institute has extended over a number of years, said:

"Gentlemen,—On behalf of this important coal mining centre I extend to you a hearty welcome to our midst.

erally well known among local residents it may be interesting to some of the visitors to be told that Nanaimo is the oldest coal centre on the Pacific Coast. Though before the advent of the white man coal was mined here by Indians, the earliest history of coal-mining for commercial purposes was that it was mined by the Hudson Bay Company, which came to Nanaimo in its early days. History tells us that coal was found here in 1849 and was first mined in a systematic way in 1852, and it has been mined systematically ever since. The original operators of the local mines, the Hudson Bay Company gave

way after a few years to an English company known as the Vancouver Coal Company, which in time was reorganized as the New Vancouver Coal Company, the latter selling out in 1902 to the Western Fuel Company, the present owners and operators of the mines which company are operating two mines and are at present opening a third.

The Grand Old Mine of B. C.

One of our mines, No. 1, is known as the grand old mine of British Columbia. Coal was struck in this mine in 1883, and the mine has now been operated for 30 years. When I tell you there is as much coal in sight yet in No. 1 as has been mined during all those years you can have some idea of the vast field of coal we have in this vicinity. Barring accidents, it is hard to prophecy the future of No. 1. During the past month this shaft made a record of 1760 tons in a single day's hoist, the average daily output for the week having been 1645 tons. On that basis if the record could be maintained for a period of 300 days (which the mine worked last year) this grand old mine would produce 500,000 tons a year, and we think that day is not far distant.

The Western Fuel Company has opened a coalfield at Departure Bay, which will be good for a number of years to come.

The company is also opening a new mine called the Reserve Shaft mine, where a splendid field of coal lay 1000 ft. below the surface. In opening this field two shafts are being sunk, and the most modern machinery installed, so that when in full operation the mine will be capable of an output of more than 2000 tons of coal daily. The field which surrounds us here is a large one and a great deal of development is going on, so that I think within a short time the centre of a large production will be in this neighborhood. The fact of this matter is the demand for coal throughout the province at the present time is greater than the supply, due to the marvellous development of British Columbia.

Do Everything for Safety.

Here, we take a great deal of interest in everything that pertains to the safety and advancement of mining, and in this regard our company can truthfully be said to be in the van. The Western Fuel Company encourages everything tending to the safety of the men in their employ.

It is known that this company's mine-rescue station was established before the enactment of the provincial law requiring that coal mine operators make provision for mine-rescue purposes. Thus this company was the pioneer in this respect in British Columbia. It is also prominent in first-aid training which work has been systematically kept up by its employees. It has encouraged mine-workers, too, in their organization of Mutual Improvement Association, at the meetings of which various matters pertaining to mining are discussed.

Again, the company has the distinction of having facilitated, as far as has been practicable, the observations of Mr. F. Napier Denison, of the Dominion

Meteorological Office, who has installed in No. 1 mine, at a depth of about 1000 ft. below the surface, a seismograph, with which to obtain a record of the earth's movements, in connection with Mr. Denison's theory that movements of the earth and coal-mine disasters in some way have relation one to the other. Whether movements of the earth have anything to do with explosions or not I do not know, but we do know there are some peculiar coincidences connected therewith and if Mr. Denison shall prove such a connection, he will solve certain things which have hitherto puzzled mining men.

Low Mortality Record

We cannot absolutely free the mining industry from mishaps and accidents. I would like to have it so that no accident would occur, and I do not know of any place where more safeguards are taken for the protection of life and limb than in our Nanaimo mines. It is unfortunate that we have had as many accidents as we have, but here we stand in this respect on a high plane. In the past ten years we have had 18 fatal accidents underground. I wish we could show a clean slate; in one mine we very nearly have a clean slate, the mortality having been only three during eight years.

In spite of all precautions these accidents will occur, but I am pleased to state that the owners of the mines are doing their best to keep them at a minimum. We certainly are doing our utmost to keep in the van in this respect, and no doubt other mines of the district are doing the same thing. In this work the company is not only receiving the support of its officials but as well of the majority of the men employed, and in this respect I can only repeat what I have said on other occasions, which is that Nanaimo is blessed with the best class of workmen I have ever had the pleasure of meeting. (Applause.)

Neighborly Co-operation.

The chairman remarked that while listening to Mr. Stockett talk of mine rescue work, it reminded him of the co-operation extended the mine owners of British Columbia by their brethren in the neighboring state of Washington. Previous to the time mine-rescue work was made compulsory in this province the Draeger oxygen-breathing apparatus was in use in Washington, and after its receipt here, but before men had been trained in its use the Western Fuel Company had a fire in No. 1 mine. Mr. Stockett wired Mr. H. M. Wolfelin, United States Bureau of Mines' official in charge of the mine-rescue training station in Seattle, if it were at all possible to come over and give Nanaimo some instructions in the use of the apparatus. Mr. Wolfelin came at once and so the first instruction given in the use of the Draeger in the province were given by the mining brethren of Washington, for which the mining men of the province felt much indebted.

In referring to the question of accidents in mines, Mr. Graham stated further, that the standing of the Western Fuel Company in this regard is exceptionally good. During the past eight years the number of accidents in the

local mines was only 1.6 for every 1000 men employed and although this record does not equal that of several European countries, it compares most favorably with that of any other colliery on the American continent.

A Lower Mortality Record

Mr. E. Jacobs, branch secretary, drew attention to the better position British Columbia had reached in regard to loss of life in its coal mines. Published statistical tables for the ten-year period—1902-1911—show the average for the province of persons killed to have been 8.16 per 1000 employed, which was the highest—with the single exception of Colorado, with a death-rate of 8.20—in comparison with about 20 of the States of the American Union and Nova Scotia.

For the ten-year period, 1903-1912, the proportion was 5.082 killed per 1000 employed, while for the five-year period, 1908-1912, it will be found to have been 4.34 per 1000 employed. This change for the better should, he thought, be given as much publicity as possible, in justice to the Provincial Department of Mines, which has, during recent years particularly, done its utmost to ensure the safety of coal-mine employees.

Papers Read and Discussed.

Mr. George Watkin Evans, consulting coal mining engineer, of Seattle, Washington, read a paper, in which he gave information obtained when examining part of the Groundhog coal field in the northern Skene country, British Columbia, and which dealt with the rock formations, coal measures, and topography of the district under notice. In the evening a number of lantern slide views were shown these giving an excellent idea of the general nature of the country, and the conditions under which coal-mining will have to be done there.

This was followed by a paper on "The Best Methods of Mining Coal Under Various Conditions," contributed by Mr. Alex. Sharp, mining engineer, of Vancouver. In the unavoidable absence of Mr. Sharp, the paper was read by the secretary. It was one of a series of papers Mr. Sharp has undertaken to prepare, and dealt largely with longwall mining. As Mr. Sharp was at one time manager of a coal mine at Wellington, his local references were of particular interest to Nanaimo coal mining men. After some comment had been made by the chairman and others, the afternoon session was closed.

EVENING SESSION

There was a good attendance at the evening session, which was opened by Mayor Shaw heartily welcoming the visitors to Nanaimo, and reviewing the coal mining and other industries of Nanaimo and vicinity. He said:

Mayor's Address

Mr. Chairman, members of the Canadian Mining Institute, and other visitors:

As mayor of this city I have much pleasure, speaking for the citizens of Nanaimo as well as on my own behalf, in welcoming you here this evening. At the suggestion of the branch secretary

of your Institute I have deferred until this session extending our greetings to you so that you might have evidence in more numerous attendance on this occasion, than it was practicable in an industrial community such as this is, to have at an afternoon session, of our sincerity in assuring you that we are indeed glad to have you among us and to take part in your meeting.

We recognise that in the case of an institution covering so wide a field as does the Canadian Mining Institute it is not to be expected that any considerable number of its members can attend these branch meetings, for the members are scattered all over the country and most of them are busy men filling positions with such responsibility that it is not practicable for them to give up the time that, in this land of great distances, would necessarily be occupied in traveling a long way to any place selected for one of your periodical meetings.

we have in our herring fishery another contributor to the total value of production in this part of the province. Perhaps, though, our powder manufacture has stronger claim to your notice than some of the other industries that I have just mentioned, for the reason that much of its products is used in mining.

As to coal-mining, in welcoming you here now I am welcoming you to the place where coal-mining as an industry on the Pacific shores of Canada had its birth, for prior to the shipment of coal from Nanaimo to San Francisco, consumption was almost altogether local and very small. I read in a bulletin issued a few weeks ago by the British Columbia Department of Mines that the record of coal mining on Vancouver Island covers a period commencing in 1835, while coal was not shipped from the Crow's Nest Pass (East Kootenay) mines until 1898, nor from Nicola Valley mines until 1907. Coal-mining on a commercial scale in Nanaimo, how-

vantage for that year not enjoyed by coal and coke, the value of which for statistical purposes, is not changed year after year as is that of metals which fluctuates.

That the coal-mining industry is making substantial progress here, and will continue to do so, you visiting gentlemen will, I doubt not, have ocular demonstration of tomorrow, for it goes without saying that not only will you visit the old established works at No. 1 Shaft, Esplanade within a few minutes walk of where we are now met, but you will want to also see the Western Fuel Company's new shafts at the Reserve Mine, in connection with which most important development and construction work are continuig to be done, with correspondingly large and substantial equipment. When I tell you that, apart from the purchase of the land, approximately \$500,000 has already been expended in shaft sinking, machinery and plant, buildings, railway, and various



Head of Surf Inlet, Princess Royal Island, B. C.

Two years ago, when you last met here, it was my very pleasant privilege—in the absence of the then mayor of this city—to welcome your Institute to Nanaimo; it affords me much pleasure to do so again today.

Perhaps since you have assembled here for the specific purpose of hearing about and discussing matters related to mining, it is hardly fitting that I should be as comprehensive in my remarks as I should otherwise feel it my duty, in justice to the other and varied interests of our citizens generally, to be, nevertheless I shall ask you to allow me to mention that we have other important industries than the chief one you naturally associate with our city and district—that of coal-mining. We have made a beginning in building up what we think we have reason to expect will develop into an important brick-making industry, this being the outcome of local enterprise in producing brick of superior quality. Then our lumbering industry is one of no mean importance, as a visit to our sawmills would at once convince you. Again,

ever, dates from about 1850. Of course production was small in quantity for many years; the official records show that the total output for 50 years (all Vancouver Island mines) was but 3,029,000 tons or only about as much as the Western Fuel Company alone can now produce in five years, and less than the combined production of the mines of Vancouver Island at the present time in two years.

You know the important place coal-mining occupies in connection with the mining industry of Canada, particularly in the west. Taking the preliminary estimate of the value of the mineral production of British Columbia last year (which was the highest of any-year on record), you will see that of a total value of all mineral production of \$32,606,000 including \$4,250,000 for structural materials used for construction purposes, the proportion of coal and coke was \$10,859,000, or about one third of the total, and this, too, when the prices of several of the metals had been at a comparatively high average, so giving the metaliferous minerals an ad-

other necessary works in connection with this expansion of the local mining industry, and that it is estimated that \$300,000 more will have to be expended—making \$800,000 in all—before the intended full producing capacity of the new mine will have been reached, you will have before you the fact that the Western Fuel Company certainly has every confidence in the permanence and profitable future of coal-mining in this vicinity, or it would not be making this comparatively large outlay in opening and equipping a new coal mine. And, gentlemen, this is not all, for in degree other companies are displaying similar enterprise and faith in the future of Nanaimo district, as you will find in the case of the Pacific Coast Coal Mines, Limited, if you shall have time and opportunity to visit that company's new shafts at Morden, near South Wellington, only a few miles south of this city. There coal has already been entered at a depth of rather more than 600 ft., and the work of opening the seams and making productive this new mine has already been commenced.

I am sorry that I am not in possession of particulars of what is being done by the Canadian Collieries (Dunsmuir) Limited, at its new mine (No. 8) in Comox district, about 75 miles north of Nanaimo, but I have been informed that a very large expenditure has been authorized in connection with the sinking of shafts, erection of buildings, installation of machinery and other equipment railway construction, development of hydro-electric water-power, and other extensive works there. In addition, though considerably less important, there is the establishment of the Pacific Coast Coal Mines, Limited's new colliery at Suquash, still further north on Vancouver Island.

Reverting to the Western Fuel Company's new mine, it will probably interest you gentlemen—particularly under the circumstances that presently you will listen to an address by the Canadian manager of one of the large colliery and mining machinery manufacturers of Great Britain, and of seeing the most interesting collection of views of bankhead equipments and other coal mine surface works that he will show you, when I tell you that the Western Fuel Company has put in for use at the new shafts two powerful hoisting engines made in Scotland, and the new air compressor installed there is of Canadian manufacture, thus showing in a very practical manner its readiness to encourage British manufacturing industries. In turning from the subject of the new shafts, I shall add that there is much of interest in connection with them that might be said, but this I

shall leave to the company's general manager to tell you, for he can do so much better than I am able with the very limited information of details that I possess.

There is one matter, though, connected with our coal-mining industry that I have pleasure in bringing to your notice before I leave this subject. I see that the programme of this meeting of the Institute provides for addresses on mine-rescue and first-aid work, work which is to have your attention tomorrow evening. Well, gentlemen, our provincial laws make it obligatory upon colliery owners operating in British Columbia to provide approved mine-rescue apparatus and to see that certificated officials and workmen in their employ are trained in the use of such apparatus. To Nanaimo belongs the distinction, however, of having anticipated this law, and of having voluntarily made provisions for mine-rescue before the law required that this should be done, for immediately the value of this precaution for the safety and protection of the men working underground was realised, the Western Fuel Company, of its own volition, purchased mine-rescue apparatus of approved type and set about having men trained in its use. It is but just to Mr. Stockett, the company's general manager, that I make this public recognition of his prompt action in this direction, in which he was zealously seconded by Mr. Thos. Graham now chief inspector of mines for British Columbia, but then general superintendent for the Western Fuel Company, and later by Mr. Thomas Mc-

Guckie, at present general superintendent, and by other officials and men in the company's employ.

Now, gentlemen, I have already addressed you at some length, so may not take up much more of your time, but before concluding there is another important matter to which I desire to make reference, if you will kindly give me your attention a few minutes longer. This is the promised visit to British Columbia of several excursion parties from the International Geological Congress to be held in Toronto, Ontario, next August. Doubtless you are already informed concerning the very great importance of that gathering which will be attended by many learned men from Europe, the United States, Canada, and other countries. We are glad to know that arrangements have been made for a comparatively large number of the geologists and other scientific and technical men who will attend that congress to visit this great Western Canada as well as other parts of the Dominion, and are much gratified that Vancouver Island will have its fair share of attention. That it will do so we have no doubt, for the preparation of the itinerary of these parties has been undertaken by the Geological Survey of Canada members of which are well informed relative to the chief places and objects of interest to be visited.

As Vancouver Island has had field parties at work on it for several years past we may feel fully assured that the best will be made of the information, so recently acquired in fullest detail, concerning the important facts that

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It is desirable shall be brought to the notice of the eminent visitors we may expect to have the pleasure of welcoming next Autumn. I am satisfied that the great economic value of the mineral resources, of the coal, especially of Vancouver island, will be impressed upon the minds of our expected visitors, and that the Canadian geologists who will impart the information to them will do adequate justice to the immense potentialities of this island, as well as other parts of the Canadian West.

In conclusion, then, permit me to again assure that we are greatly pleased to have this opportunity of welcoming you to this city and district. We trust your meeting here will prove to have been both instructive and agreeable to you, and that you will carry away with you, when you shall return to your respective places of residence, most pleasant impressions of your short stay in our midst and that kindly recollections of Nanaimo, its industries, its opportu-

there is a great deal to see and learn in connection with the mining and shipping of coal. They would now have the pleasure of hearing a paper on "Modern Surface Equipment of Coal Mines," by Mr. Henry Clark, of Victoria, who is Canadian manager for Head, Wrightson & Co., Ltd., of Stockton-on-Tees, England, colliery and mining engineers, who have manufactured and put in bank-heads and other mine-equipments in different parts of the world.

Modern Surface Equipment of Coal Mines.

Mr. Clark, after expressing pleasure at having been afforded opportunity to take part in the proceedings at that meeting, read first the following introduction to his paper:

"With the tremendous mineral resources of Canada undeveloped, it is imperative that mining should, increasingly, receive the attention it demands.

The nature of the coal—whether steam, house, gas, or coke-making—its freedom from dirt or otherwise, the ground, the aspirations of the owners, the market requirements, the possible life of the colliery, etc., etc., are all factors that must be taken into careful consideration. While in the Old Country keen competition demands the most efficient method of separating the different kinds of coal, and removal of refuse from the coal, it seems to me that in Canada one of the main features must be to reduce, as far as possible, manual labor.

"While efficiency in every department should have careful consideration, the necessity for simplicity must never be lost sight of, and, if possible, units be so arranged that they can be added to, as the colliery output increases. Even in Canada, colliery managers and engineers are favoring the use of steel, in place of timber, for structures, owing to the danger of fire, and, while it may



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nities, and its people will long remain with you. Gentlemen, we welcome you most cordially, and wish you a most successful and useful meeting.

Acknowledgement by Chairman.

The chairman heartily thanked His Worship the Mayor for his cordial welcome and for the interesting information he had given about Nanaimo and its leading industries. He regretted the absence of Mr. M. E. Purcell, chairman of the Western Branch of the Institute, and of the provincial mineralogist (Mr. Wm. Fleet Robertson), both of whom had gone to Ottawa to attend the annual meeting of the parent Institute.

Apart from the historical associations of Nanaimo with the development of the coal-mining industry of the Pacific coast, to which Mr. Stockett had called their attention at the afternoon meeting, there is much to make this important coal-mining centre one of the most desirable places in the province at which to hold meetings of the Institute, for

There is no profession where it is necessary for a man to have a wider range of knowledge and experience. Life is too short for any of us to keep in step with the ever-lengthening strides, or to become thoroughly conversant with all the branches of engineering introduced. In every calling today it becomes necessary to specialize, and in mining, as in everything else in life, we are dependent one upon another. 'Other men labor and we enter into their labors,' and I take it that the main object of institutions of this character is that by co-operation and interchange of thought and experience, we may be a help to one another.

"My object this evening is to give a little review of my work and experience in connection with surface equipment of coal mines, that I trust may not be without interest or profit."

"It is impossible to lay down hard and fast lines for the surface equipment of collieries. Every place has its own peculiar features and special needs.

be argued that many timber head-frames and screen-structures have stood for years and done good service, the number of collieries that have had their whole surface arrangement swept clean in a night, proves the risk, and to add this anxiety to the many others a colliery manager has to carry is, to say the least of it, not desirable. All will agree, I am certain, that the least first cost is not necessarily always the most economic."

Mr. Clark then dealt with his subject under separate heads, noticing in more or less detail the following: Head-frames, pulleys, keps, cages, simultaneous sinking, safety devices on cages, air-boxing for upcast shafts, safety detaching hooks, patent tipplers, mining cars, screens, picking belts, horizontal screens, coal-washing, storing and shipping coal, and maintenance.

In concluding his paper Mr. Clark said: "In spite of the prophets who tell us that in a few years coal will not be needed, and that oil will take its

place, we have faith to believe that these tremendous resources have been deposited all over the world for the service of man, and, being needed, the most efficient and economical way of securing and treating the coal is surely worthy of the attention of thoughtful men."

Numerous lantern-slide views were then shown, these including general bankhead equipments in various parts of the world, and many others showing details of construction of head-frames, etc. Mr. Clark replied to many questions asked concerning the works and plant illustrated, and then spent half-an-hour explaining the working features of several models he had on view. Altogether the address was most instructive, and its great interest and practical usefulness were generally recognized.

Beside showing Mr. Clark's lantern-slides, Mr. Wm. Hender, of Victoria, who had kindly taken to Nanaimo his own stereopticon lantern and personally operated it, showed the slides Mr. G. W. Evans had had prepared to illustrate his paper on the Groundhog coal field, read at the afternoon session.

EXCURSION ON WEDNESDAY

Two excursions were made on Wednesday—in the morning to the Western Fuel Company's Reserve Shaft mine, and in the afternoon to Malaspina's Gallery, on Gabriola island.

Reserve Shaft Mine.

On Wednesday morning, after having first been shown the company's Mine-Rescue training station and oxygen-breathing apparatus, the visitors were taken by train to the Reserve Shaft mine, on the Indian reserve, near the mouth of Nanaimo river. The party was under the guidance of Mr. Stockett, general manager; Mr. Thos. McGuckie, general superintendent, and Mr. A. S. Hamilton, master mechanic.

Both of the new shafts at the new mine are 10 by 26 feet in the clear, divided into three compartments—two for hoisting and one for air. Both have an area of about 100 sq. ft., and in this connection it was pointed out that it is unusual to have the air shaft as large as the main shaft. Hoisting engines were made by Andrew Barclay & Sons, Ltd., Kilmarnock, Scotland; that for the main shaft is 30 by 60 with 14-foot drums and that for the air shaft 26 by 54, with 12-foot drums. They are provided with all the latest known devices for preventing overwinding, checking speed, and automatic closing off if the engineer be neglectful or incapacitated mentioned machinery; four more will be added to complete the full battery. A double Sirocco fan is being put in; capacity 400,000 to 500,000 cubic ft. of air. The standard-gauge railway from the mine to the company's shipping docks at Nanaimo is 4 1-2 miles long; near the mine the Nanaimo river is crossed by Howe truss, an overhead bridge having two spans each 150 ft., with centre pier; this bridge has been built strictly in accordance with the requirements of the Railway Act of British Columbia. Expenditure to date on railway, shaft-sinking, machinery, etc., has been approximately \$500,000, and it is estimated that it will require a further expenditure of

\$300,000 to place the mine in condition to maintain the intended output of 2000 tons of coal a day. At least 1000 men will be employed here when the mine shall have been developed up to that output capacity.

Malaspina's Gallery

After lunch a visit was paid to the northern end of Gabriola island, the party having been taken there in the Western Fuel Company's launch, with Mr. A. S. Hamilton in charge. This interesting natural phenomenon is a grotto or balcony cut out of the sandstone rock on the northwestern shore of Gabriola island by the action of wind and wave during centuries of erosion. It is more than 100 ft. long by about 10 ft. in width. Captain Alexandro Malaspina, an accomplished Italian navigator in the service of Spain, was hereabouts in 1791, engaged in an expedition of survey and discovery. He went as far north as the Malaspina glacier, in Alaska, between Mt. St. Elias and the sea, that glacier having been named after him.

The return trip to the city was made via Departure bay, where, in the distance, was seen the Dominion biological station, and nearer the works of the Canadian Explosives, Ltd. Passing close to the headworks of Brechin mine, en route, a short visit was paid to the Protection island bankhead, and then the visitors were landed in Nanaimo to have dinner before the opening of the evening meeting.

WEDNESDAY EVENING SESSION.

The session on Wednesday evening was held in the Oddfellows' hall, and Mr. Thos. Graham again presided. After calling the meeting to order, and expressing pleasure at seeing such a large attendance, the chairman stated that the programme for the evening included a paper by Mr. J. F. Menzies, of Roslyn, Washington, general superintendent of the Coal Department of the Northwestern Improvement Company, owning and operating several collieries in the State of Washington, who would give them some interesting and useful information concerning Mine-Rescue and First-Aid work, in which the visitor had taken a deep interest for several years. They would also have an address from Mr. P. B. Ashbridge, on the first-aid work of the Canadian branch of the St. John Ambulance Association in Western Canada.

Before calling on Mr. Menzies to read his paper, however, he would give the meeting a little information concerning mine-rescue apparatus and coal-mine accidents in British Columbia.

Mine-Rescue Apparatus and Coal-Mine Accidents

There are in this province at the present time, said Mr. Graham, 88 sets of oxygen-breathing apparatus for use in cases of need. These comprise 49 sets of Draeger two-hour, 30 sets of Draeger half-hour, and 9 sets of Fleuss apparatus. As the latest statistics show that there were 7130 persons employed, this gives one set of apparatus for every 81 persons employed, which is a considerably better proportion than some authorities on the subject state to be a necessary one.

The numbers of fatal accidents in coal-mines of British Columbia in recent years were as under:

Year....	No.	Ratio	
1912.....	28	3.93	per 1000 employed
1911.....	16	2.32	" " "
1910.....	28	3.61	" " "

The lower ratio for 1911 was due to the fact that during nearly eight months of that year most of the coal-mines in the Crowsnest district were inoperative, the mine-workers having been on strike, with the result that the quantity of coal produced was 800,000 tons less than that in 1912.

In the ten-year period, 1903-1912, the death rate had been 5.078 per 1000 employed. The percentage of deaths attributed to various causes was as follows:

Cause.	No.	Per Cent.
Falls of roof....	6	21.43
Falls of coal.....	3	10.72
Mine cars.....	9	32.14
Haulage	18	64.32
Explosions	7	25.00
Miscellaneous	3	10.72

Seventy-five per cent. of the accidents due to falls of roof and coal, and to haulage, were avoidable for they were due either to negligence on the part of the victims of them or to lack of discipline of officials.

Legislation, however stringent, or supervision however efficient, will not prevent this class of accidents. Here, so much depends upon the personal element that only by the co-operation of every person concerned, from the mine inspector and the manager down to the trapper boy, can it be hoped to reduce to a minimum the number of accidents from falls of roof and coal. At such a meeting as we have tonight, at which are present so many firebosses and shotlighters, it is an opportune time to urge upon them the great necessity that exists for their unremitting co-operation, for they come daily into closer contact with all underground employees than do other mine officials; so that an occasional word of advice, warning, or admonition from them is likely to do much toward reducing the number of fatal accidents from the causes just mentioned, as well as from haulage.

Mine Rescue and First-Aid Work.

Mr. Menzies said: "Mr. Chairman and fellow-workers, it is a pleasure to know the kindly feeling that exists between the mining men of this province and those in the State of Washington, as is well emphasized by these meetings. A few days ago our State mining inspector, Mr. D. C. Botting, of Seattle, telephoned to me and asked if I would take his place and read a paper before the Western branch of the Canadian Mining Institute at its meeting to be held at Nanaimo, as he was unable to be present himself, and did not wish to disappoint you. I replied that it would be a pleasure to me to be of any assistance in this direction, but I feared the Institute would be disappointed in me as his proxy. Since coming here and seeing the well-kept rescue station of the Western Fuel Company there is very little to be said, for you have here the keynote of rescue work, namely, 'Eternal Vigilance.'

"The development and perfecting of breathing apparatus has brought the

question of mine-rescue work quite prominently before the mining world. Various Government commissions have investigated the subject, and have reported favorably, and the demand being urgent for some way to quickly explore mine-workings after an explosion to rescue any miners still alive and to extinguish mine fires, without waiting for ventilation to be restored, that Government mine-rescue corps have been organized and training stations established so that those desirous of receiving instruction in the use of breathing apparatus can be trained and obtain certificates of competency in mine-rescue work. Rescue corps have been found of great assistance in times of emergency, these bringing to the scene of disaster trained workers not affected by the horrors and responsibility of the accidents as the management, superintendents, and other local workers are. They act as good Samaritans and render much valuable assistance by their co-operation.

The two most important factors in modern rescue work of saving life and property are the man and the apparatus. Both have important functions to perform. The man, however courageous and willing, is absolutely helpless in air containing insufficient oxygen to sustain life. With modern breathing apparatus, though, he can live and work for hours in the most poisonous gases with a reasonable degree of safety and comfort.

To make a good rescue worker the man should be cool-brained, physically strong, free from heart or lung trouble, or any contagious affection; he should be familiar with the breathing apparatus, understanding its limitations and chemical principles and have confidence that with careful watching it will sustain his life for the time he intends staying in the poisonous gases. The wearing of breathing apparatus is not so simple as would appear to the casual observer; life has been sacrificed needlessly by inexperienced men wearing it in rescue work after an explosion.

Training in the use of the apparatus should be systematic, at frequent intervals, and of a character to thoroughly familiarize the person with its construction, principles, operation, limitations, etc. Confidence in its use should be established by its being worn with conditions and surroundings similar to those encountered in mine work in irrespirable air. Training should be continued at frequent intervals, so as to keep the worker in proper condition for wearing the apparatus in case of emergency.

To make rescue work effective, corps should be organized and trained, similar attention being given to this as to that of any other department of mine work. Each corps should consist of a captain, lieutenant, and at least six men, under strict discipline so that all orders may be carefully carried out so as not to endanger the lives of those engaged in rescue work after an explosion. The services of any member of the corps failing to observe discipline or obey orders should be dispensed with. Rescue work is a stern business and should be treated as such. Meetings with instructive papers and refreshments, and demonstrations and contests for tro-

phies should be regarded as recreations but not as methods of supplying trained men for use of breathing apparatus in time of disaster.

It has taken 75 years to develop the modern breathing apparatus; difficulties that retarded earlier development included the absence of a suitable air receptacle, proper means to feed the air, and a good absorbent of carbon dioxide, beside the general belief that pure oxygen is detrimental to the human system.

The several makes and types of apparatus on the market were briefly described by Mr. Menzies, who stated that for all around heavy work, general use apparatus he preferred the helmet type, as it can be worn in any kind of gas for rescue work, or in thick smoke in fire-fighting. For rapid rescue work after an explosion though, mouth-breathing apparatus undoubtedly has advantages. For safety and effectiveness, it is necessary to train men in the use of both kinds of apparatus. All apparatus should be kept in good workable condition, and there should be on hand a full supply of oxygen and other requisites, of repair parts, and, as well, a fully charged battery lamp for each apparatus, with extra battery.

The deplorable results from lack of frequent training, unworkable condition of apparatus, or absence of necessary supplies, in an emergency were emphasized. Remembering that what is everybody's business is nobody's business, the motto should be "Ready for Immediate Use." "Organize and Inspect Frequently" is the price to be paid for a thoroughly efficient rescue crew and apparatus.

Should occasion arise for rescue work to be done, the corps should be established as close as possible to the place for its work; in the fresh air and out of the path of a possible explosion. All the apparatus, reserve supplies, pulmoters, stretchers, and first-aid materials should be taken to this base, and, if possible, telephone communication with the office and main building should be established. The advance force, consisting of three men in command of the captain, fully equipped for two hours' work, should be despatched on reconnoitering work as soon as possible, and if it be thought any men are alive in the mine, this crew should also be equipped with half-hour rescue apparatus, for entombed men to wear in making their escape. It is important that during the first two hours everything possible should be done to enter the mine and bring to fresh air the bodies of those suffocated, for it has been found that there are good chances of resuscitating those who have been in after-damp up to two hours; after that time, if the after-damp has filled the whole mine, there is very little chance to save life, and the work should be concentrated on restoring ventilation, extinguishing fires, and building stoppings.

The remaining men of the crew should be occupied in getting the base established and having reserve supplies in order, and, if there is a telephone system in the mine, should assist in re-establishing communication with the face. Care should be taken to protect apparatus and supplies from being tampered with by curious outsiders. This force

should be ready to go to the relief of the reconnoitering party, and to take up the work where the latter left off on returning. The base should be advanced as rapidly as practicable, if the mine be large, so as to save travelling time. Hot coffee and sandwiches should be on hand to enable workers to keep up their strength and stay at work longer. Under no circumstances should the men wearing breathing apparatus use alcoholic stimulants.

Each mine should have its own rescue corps, consisting of at least six—preferably eight—men, with four sets of apparatus. If there be more than 500 men employed in the mine, there should be two corps with six apparatus of the two-hour type and three of the half-hour mouth-breathing type.

Mr. Menzies gave information relating to organization of mine corps, and training duties. He next briefly reviewed the work of the United States Bureau of Mines of the State Inspector of Coal Mines in connection with the establishment of the Mine-Rescue Training Station at the University Campus, Seattle. Though lack of funds has to some extent hampered progress, valuable work has been accomplished, 170 men having received training in mine-rescue and first-aid work, while Government car No. 5 has trained 44 men, so that the State of Washington has 214 trained men holding Government certificates of competency. In addition, 66 men have received training in first-aid work only. Mine operators have purchased 36 apparatus, which are kept at ten mines where there are trained rescue corps. There has been enough work done with men wearing breathing apparatus fighting mine fires and in exploration work in mines in the State of Washington to demonstrate the usefulness and value of these organizations in connection with those mines. A bill has been introduced in the State Legislature regulating the use of Mine-Rescue equipment. It provides, in part: "That three sets of apparatus shall be maintained at each mine, and one additional instrument for each 100 men until there are five sets, and that five per cent. of the men shall be trained in the use of the apparatus;" further, it makes compulsory that five per cent. of the miners shall be trained in first-aid work.

Turning to first-aid work, Mr. Menzies shortly reviewed the value of this. He said: "We have all seen the needless sacrifice of life and the permanent maiming of miners for the lack of some one who knew what to do and how to do it. This has been a great source of worry to the sympathetic mine manager. Death from hemorrhage and shock; simple fractures made compound; wounds infected; and much preventable suffering caused to injured miners, have resulted in the past. But now the First-aid team has changed much of this. The injured one is bandaged up, his broken bones are splinted, he is treated for shock, and otherwise is made comfortable and handled carefully. What a satisfaction to the first-aid man it must be to know that he has made a fellow-worker or friend comfortable. No sitting around now to wait for death to relieve the poor sufferer, but the hemorrhage is staunch-ed, the injured one relieved and kept warm and then taken to the doctor."

"We have equipped our men with first-aid packets, and our mines with first-aid boxes, military stretchers, and heavy warm blankets all in water-tight galvanized-iron cases. We have found that the First-aid instruction works admirable with mine-rescue training. It is a very instructive study, and makes the mine-rescue work more interesting and lightens the drudgery of training, so we call our corps at Roslyn "First-aid and Rescue Corps."

In conclusion, Mr. Menzies gave particulars of the numerical strength of the corps at Roslyn trained in first-aid and rescue work, together with figures showing the number holding either Draeger or Red Cross certificates also information concerning trophies won by Roslyn men at contests, as follows:—

First-aid went hand in hand with rescue work. At Roslyn they had 8 corps and 100 men all certificated as foremen, fire bosses, mine-rescue, or Red Cross First-aid men. These were "Roll

reviewed the history of the introduction and training in the use of the Draeger apparatus in Nanaimo, stating the first helmets were brought here on November 24, 1910, from which date it would be noted the Western Fuel Co. anticipated the Mining Act which did not come into force in this particular until March, 1911. By October 2, 1911, the company had 21 trained men and on December 30, 1911, 14 more trained men were added. On May 28, 1912, 27 men graduated, bringing the total number of local men trained in the use of the Draeger apparatus up to 62. Mr. McGuckie also described at length the system of drill by which employees of the local mines were trained in the use of Draeger apparatus.

Mr. A. S. Hamilton also expressed his appreciation of Mr. Menzies' paper and remarked he felt flattered to think Nanaimo had followed in the footsteps of the older State of Washington in reference to the adoption of the Draeger apparatus in connection with mine-rescue

St. John Ambulance Association Work.

Mr. P. B. Ashbridge, who is the instructor in St. John Ambulance first-aid work to the employees of the Canadian Pacific Railway west of Winnipeg, and who has instructed among hundreds of others, Sir Wm. White, Mr. F. W. Peters and other high officials of the company, stated that St. John Ambulance classes had been instituted a hundred years ago, since which time many thousands of people had been given instruction in first-aid work. The work was now assuming large proportions as could be gleaned from the fact that 4000 men employed by the Canadian Pacific Railway west of Winnipeg had received first-aid instruction, 3700 of whom had successfully passed the examinations. Seven thousand accidents on the C. P. R. had been treated on the spot by its own employees who were versed in the work, the more serious cases necessitating removal of the patient to a hospital. He



Taking in Supplies in Winter to Surf Inlet Gold Mines, Princess Royal Island.

of Honor" men. A blue print of the corps was hung up in the mine, this giving the names of members, ages, occupation, height, nature of certificate, residence, nationality and number of years worked in the mine. The Roslyn crew received honorable mention at the U. S. Bureau of Mines contests at Pittsburgh, Pa., and won a valuable trophy in a contest at Helena, Montana. After proficiency their men received a button and each year thereafter a bar was added.

The chairman remarked that there was much similarity between the system of mine-rescue work as carried on in this province with that described by Mr. Menzies; there were, nevertheless, many points to be gleaned from Mr. Menzies' paper, which would materially assist in the work here.

Mr. Thomas McGuckie expressed his appreciation of the paper read by Mr. Menzies and stated the work as outlined in the paper was very similar to the work carried on in Nanaimo. He briefly

work. He referred to the suggestion that a list should be hung up at the mine and said that after an accident there might be a certain amount of demoralization with, perhaps, half the corps in the mine, and the foreman not at hand. He suggested that the names of the members of the rescue corps should be recorded each shift on their going below, by a brass check or token.

A hearty vote of thanks was accorded to Mr. Menzies who said:—It is really more than I expected or deserved, and I am quite sure I shall take back more than I brought, after seeing the excellent advance in rescue-work in the Western Fuel Co.'s mines. It has been a good deal of worry, in my experience, to get hold of men at the proper and critical moment. Everyone is thrown into such confusion and there is a lack of discipline. Mr. Hamilton's suggestion is a good one. When accidents come we should be prepared to be in the mine within a few minutes; everything depends on that.

was pleased to see that a centre had been instituted at Nanaimo; also that good work was being accomplished here. He was at Victoria during the visit of the Duke of Connaught and saw the demonstration of first-aid work at that time, and as he considered himself a fairly good judge of good work when he saw it, he could say the Nanaimo team did not get the credit due it at that competition, but this was due to its not having given attention to drill as had its competitors, who were accordingly adjudged as having more fully met the conditions of the contest.

First-aid work was a good thing for all. The employer should have it for the sake of the employee, the employee should have it for his own sake, and everybody should have it for the sake of humanity.

Miners' Mutual Improvement Societies.

The chairman next spoke on the subject of Miners' Mutual Improvement Societies, and said: "With regard to these they are something new to me. The

first one I attended was in 1912 at Nicola Valley. In that district I had the pleasure of attending one of a series of meetings held weekly, the subjects discussed being useful ones for underground men. On that occasion the subject was similar to that on which Mr. Gunnes is to read a paper tonight. I should like to see a further extension of the idea of Mutual Improvement Societies all over the province, then I could see the Minister of Mines and try to induce him to occasionally appoint a lecturer to address such societies. But the miners, as being most concerned, must themselves show a certain amount of interest.

Mr. Matthew Gunnes of Nanaimo, then read a paper on the question of "Mine Accidents and How to Prevent Them." In this he dealt with his subject at length, giving ample statistics of accidents and the usual causes. He was thereafter congratulated by Mr. T. R. Stockett, Mr. Menzies and others.

age of the company alone, and not for the general safety of all concerned. Mr. Gunnes' paper had touched the points very fully. At Roslyn he (the speaker) had found that the miner would not take care of himself. "The only method, I find, is to use strict discipline." With us if his timbers are not placed properly the miner is sent home for a week, and if caught three times in a similar offence he is discharged. If caught, on a haulage way either he was discharged forthwith. He had the Miners' Union butting in and asking for the reinstatement of these men, but he thought that such offences which jeopardised alike property and life, and especially the latter, were deserving of punishment, and that the Union should see that to protect the safety of the men it was essential that the offenders should be severely dealt with.

Thanks for Co-operation

This having brought the programme of Institute business to an end Mr. E.

"A pleasant little interlude thereupon took place, this being the presentation to Mr. James Price, a well-known old-timer of Nanaimo, of a gold watch by the employees and management of the Western Fuel Company on the occasion of Mr. Price's retirement into private life after a period of 33 years spent in the Nanaimo mines.

"Mr. Thomas McGuckie, superintendent of the local mines, was greeted with applause when he stated that it gave him great pleasure to make a presentation to Mr. Price on behalf of the employees and management of the Western Fuel Company. Mr. McGuckie called upon Mr. Stockett for a few remarks, who stated that speaking from the company's standpoint, he was very sorry to see Mr. Price leave the company's employ, though he felt 37 years of active service—33 of which were spent as fireboss, entitled a man to a well-earned rest. The best he could say of Mr. Price was that no complaint against



A Sled Load of Gold Quartz Specimens From Surf Inlet Gold Mines That Have Since Taken First Prize at Vancouver Exhibition.

Mr. Stockett said that nothing pleased the mine-owner better than to see the younger men taking an interest in mining subjects, especially in questions appertaining to the safety of those employed in the mine. He had always found the men ready and willing to bear their share of the burthen, and during ten years' experience he had always been ready to do his part. He was proud and happy to say that he had received loyal support. Mutual Improvement Societies were a good step in the right direction, and he hoped all would take part in these mutual heart-to-heart talks. As Mr. Gunnes pointed out, they should try to make Nanaimo mines as safe as any in the whole world.

Mr. Menzies said he was pleased to hear Mr. Stockett's observations in regard to the men helping him over the difficulty to lay down plans, as it was not nice to find, as sometimes happened, for them to hold back, just as if these arrangements were only for the advantage

Jacobs, secretary of the Western Branch, thanked very heartily Mr. Stockett, Mr. McGuckie, and all others who had so kindly co-operated to make the Institute meeting at Nanaimo the success it undoubtedly had been. They were, as well, under obligation to the visitors from the State of Washington and elsewhere for their attendance, and in particular to the several contributors of papers, who had so materially assisted in making the meeting a really instructive one, to whom assurance of appreciation of their efforts was given. On behalf of the Branch Council and members generally the secretary asked all, not omitting the local Press for its good services, to accept the cordial thanks of the Western Branch of the Canadian Mining Institute.

Presentation to Mr. James Price

Before adjournment there was an interesting event, thus described by the "Nanaimo Daily Herald."

him had ever reached the office. It he looked after his own interests in the future as well as he had done in the past those of the company he would come out all right. The speaker had been in charge of the local mines for the past 10 years and during that time the management had never received a complaint from that section of the mine over which Mr. Price had charge, and for this reason he was sorry to see Mr. Price go.

"Mr. Stockett then presented Mr. Price with a beautiful gold watch, the recipient replying in appropriate terms in which he briefly reviewed his career from his arrival in Nanaimo 37 years ago, and his decision to retire from active work to farm life in which he expected to end his days."

Adjournment was then made to another hall for the enjoyment of supper and a smoking concert, concerning which the "Nanaimo Free Press" said, in part:

"Mr. Thos. Graham, chief inspector of mines, presided over a large gathering of guests, including members of the Canadian Mining Institute, in honor of whose visit Mr. T. R. Stockett entertained the company.

"The evening was one of pleasure and festivity, good feeling and harmony prevailing from start to finish. Refreshments of a tasty and appetising description were generously provided and daintily served by the charming waitresses.

"After the boards were cleared of fare a smoking concert was provided, with an excellent programme.

The various vocal and instrumental selections rendered having been mentioned in complimentary terms, the "Free Press" closed its notice of the concert as follows: "Mr. Abe Hamilton having first recited 'The Man at the Wheel,' an original live poem full of rugged beauty and realistic phrase, 'Auld Lang Syne' concluded an evening enjoyed by all present.

THE MAN AT THE WHEEL

(By A. S. Hamilton.)

Response to the toast, "Surface Department," as read by Mr. A. S. Hamilton, Master Mechanic, at the banquet of the officials of the Western Fuel Company, January 23, 1909, and again at the "smoker," following the meeting at Nanaimo of the Western Branch of the Canadian Mining Institute on March 6, 1912.

In looking around me for something to say
In response to this toast,
I'm hoping to utter no language that may
Look to you like a boast;
For rather I think do we surface men feel,
That here on the top we've the best of the deal,
We're content to be reckoned a spoke in the wheel—
A unit at most.

But just for a moment we ask for your ear,
Since we're in the act;
And would like to remind every mining man here,
With tenderest tact,
That though we don't share in the strenuous pace
That exists down below in your hell of a place,
The troubles don't end when the coal leaves the face;
And that is a fact.

According to what the geologists say,
It duly appears
The coal has been formed and hidden away
For millions of years;
And often we feel that their theory's right
It so clearly explains why the coal it takes fright,
And balks just as soon as it hits the daylight
And this valley of tears.

And everyone knows just how fractious it gets,
And how eager to shine,
Though we handle it just like a child in the pets,
All to hold it in line.

When we read of its energy bottled and pent,
And its frantic ambition to find a clear vent,
We're ready to swear that the most of it's spent
Right here at the mine.

How they manage at "Frisco" there's few of us know,
And less of us care;
For long before they have their troubles below
We've had our share.
From the foot of the shaft to the ship at the dock,
'Tis nothing hut one constant obstinate balk,
And it often exhausts all the patience in stock,
And would more if it dare.

Yet do not assume that as martyrs we pose;
We make no such appeal;
We're paid for our work, and—as everyone knows—
That's all in the deal;
But tonight we make bold to present to your view,
A blue-jumpered, plain-looking chap in our crew,
To whom we feel certain your homage is due—
The man at the wheel.

He stands at his throttle from morning 'til night,
You ne'er see him flinch;
And the swift plunging cage that's hid from his sight,
He will land to an inch.
The big creaking drums that would like to run wild
He handles them just like a woman her child;
And they know he's the boss; and though usually mild,
He can hurt at a pinch.

In the morning he tests every lever and screw,
Each cotter and pin;
And he makes them all swear they will stand by him true,
Through thick and through thin.
The turbulent parts of his monster machine
He pats on the back, though he lectures them keen,
While the big sombre dial stands watching the scene
With satisfied grin.

By a curious blend of coincident law
And mechanical rules,
His nerve is of steel and as free from a flaw
As the lever he pulls.
And you step on the cage with a confident air,
And, without the least thought, place your life in his care;
You instinctively feel that you're safe while he's there
At the end of the tools.

His mind is spring loaded and ready to pop
If the least thing goes wrong;
He'll spring like a trap should the signal to stop
Be flashed on his gong.
Yet though he lives under this tension and strain,
And an air of excitement envelops his plane,
The power of control and command of the brain,
Loom up in him strong.

From the manager down we may all make mistakes,
Strange as it may seem;
Yet we may overtake them without any aches,
Or the loss of a dream;
But the man at the hoist must have never a trace
Of an error, no matter how strenuous the pace;
And this truth alone should allot him a place
High in our esteem.

We're obliged for your toast and 'tis pleasant to know
That we have your goodwill;
May the sentiment mutual continue to grow
While we grind at the mill;
And when in the future we socially meet
And extend to each other those compliments neat,
We humbly request you to take from your store
Of greetings and wishes one little cup more;
An extra kind whisper of praise in the ear;
A bumper that's bigger and fuller of cheer;
The pleasantest smile you may have at command;
The kindest, friendliest shake of the hand;
Your nicest "Good-day" and encouraging smile;
A clap on the back in your jolliest style;
And shower them along with the thanks of your wives,
On the man who so faithfully handles your lives;
He's the King of the Surface Crew, Boss of the Kit,
He's the muscle and nerve, he's the man with the grit;
He's the Prince to whom each of us raises our cap,
That dungareed, blue-jumpered, plain-looking chap,
The man at the wheel.

F. Panvini, who returned from the west coast of Graham island recently, exhibited in Prince Rupert a large piece of paraffin wax which he picked up among the rocks, says the "Queen Charlotte Islander" of the 10th inst. It was part of a piece weighing about six pounds. Mr. Panvini is interested in several oil propositions on the west coast.

This spring the Cariboo Timber company will build a saw mill on the Fraser river close to South Fort George that will have a capacity of 25,000 feet daily.

PERSONAL AND GENERAL

Movements and News of Prominent Mining Men.

Written for the B.C. Mining Exchange by E. Jacobs

(Continued from last month.)

Mr. Frederick K. Brunton was appointed assistant superintendent of the British Columbia Copper Co.'s smelting works at Greenwood in the summer, which post he continues to fill.

Mr. G. O. Buchanan, Dominion supervisor under the Lead Bounty Act, after several anxious months during his wife's illness, after her death removed to the Coast for a change, returning to Kootenay later in the year.

Mr. J. W. Bryant resigned the position he had for some time held as super-

Mr. W. C. Buchanan, on his return from a visit to Fort Worth, Texas, took part in the management of the Yankee Girl mine, in Ymir camp, which the Mabry syndicate of Spokane, with which he is connected, acquired from the liquidator under option of purchase.

Mr. A. Burnett early in the year left the employ of the British Columbia Copper Company and removed to Ontario. When last heard of he was in Cobalt camp.

Mr. E. V. Buckley remained throughout the year in charge of operations at

per mines in Phoenix camp, Boundary district, had the satisfaction of seeing in 1912 the largest total output of ore from those mines of any year in their history. The low cost of mining at the Granby mines is remarkable and gives positive testimony to the efficiency of the superintendence responsible for it.

Mr. E. E. Campbell did much traveling for the Granby Consolidated Co., examining properties in many parts of the province, and adding much to the company's record of information concerning the prospective mineral resources of the parts visited.

Mr. Herbert Carmichael voluntarily retired at the end of the year from the position of Provincial Assayer, which he had filled for nearly 21 years his personal interests requiring that he give the whole of his time to them.

Mr. K. B. Carruthers, in the capacity of superintendent, had charge of devel-



Fred M. Wilk And His Black Wolf, Princess Royal Island, B. C.

intendent for the British-Yukon Company and, after having first visited Rainy Hollow, went to Toronto. A little later he continued his journey to England. He has since made a hasty trip to the West, and at the close of the year was again in the Old Country.

Mr. James Buchanan, superintendent of the Consolidated Mining and Smelting Company's smelting works at Trail, West Kootenay, in common with other prominent officials of the company, was kept very fully occupied, especially as during the year important changes and additions to plant were made at the works.

Mr. Buchanan made time, however, to prepare for the Canadian Mining Institute an interesting and valuable report on the copper-smelting department or the company's reduction works.

the Queen gold mine and stamp mill. Sheep Creek, Nelson mining division, and developed much ore of good grade in the lower levels of the mine.

Mr. C. F. Caldwell had a strenuous year in connection with the further development of, and shipment of ore from, the Utica mine, on Paddy's mountain, in the western part of Ainsworth mining division. The measure of success he met with was certainly well-merited, for he was most persistent in overcoming the many obstacles to progress he encountered.

Mr. C. W. A. Cameron continued to direct the development of the Consolidated Mining and Smelting Co.'s Richmond-Eureka group of mines, near Sandon, Slocan.

Mr. C. M. Campbell, assistant superintendent of the Granby Co.'s big cop-

opment work, and additions to mine and concentrating mill plant and equipment at the Molly Gibson mines, on Kokanee creek, Nelson mining division. The year's ore production record showed much improvement, and preparations were well advanced for a further increased output.

Mr. Lyman A. Carter, manager of the Blue Bird mine, in the south belt of Rossland camp, energetically continued development of that property, and proved the existence of a promising body of ore below the 200-ft. level.

Mr. Bernard Caulfield was manager at the Michel colliery of the Crow's Nest Pass Coal Co., at which work was continued the year through.

Mr. W. J. Clark, foreman at the Payne mine, near Sandon, Slocan, in October had the misfortune to be seriously in-

jured in an explosion in the low-level audit the work of driving which he was superintending and unfortunately lost an eye as a result. He left the hospital about the end of the year, and remained a time in Vancouver before returning to Slocan.

Mr. J. Cleveland has continued to make Spokane, Washington, his headquarters. He was not in British Columbia mining camps so much in 1912 as in earlier years.

Mr. H. Hayman Claudet put in at Rossland, on the Le Roi property of the Consolidated Mining and Smelting Co., one unit of the Elmore Vacuum process plant, to test its efficiency in saving the valuable metals from low-grade silicious ores occurring in the Le Roi mine.

Mr. George A. Clothier as superintendent at the Indian Mines Co.'s property in the Salmon river section of Portland Canal mining division, did development work that resulted in some shoots of good ore being opened. The outlook for the property is, consequently, much improved.

Mr. C. L. Copp, manager for the Corcoran Mines Ltd., was engaged in the development of the company's mine on Cadwallader creek, Lillooet, preparing to open sufficient ore to keep the stamp mill running regularly next summer.

Mr. W. L. Coulson, general manager of the Canadian Collieries (Dunsmuir) Limited, found his company's coal mining operations on Vancouver Island much interfered with by a strike of the miners, which took place about the middle of September.

Mr. S. Coulter, superintendent of the Richmond Consolidated group in the south belt of Rossland camp, had several men employed in prospecting mineral claims that his company had taken hold of. The last property to be added to the group was the old Lily May, which is usually regarded as having been the first location made in that part of the Province.

Mr. W. R. Ferrier, mining engineer and geologist, of Toronto, Ontario, who some years ago was on the staff of the Centre Star Mining Company, Rossland, and has since had a wide mining-engineering experience in various parts of the American continent, was in British Columbia in the autumn in the interest of the Natural Resources Exploration Co., Ltd., for which he is general manager.

Mr. John A. Finch, of Spokane, who, with Mr. George H. Aylard, developed the Standard silver-lead mine from a prospect into the valuable productive mine it has latterly become, paid several visits to the property during the year.

Mr. W. E. Finch made New Denver his headquarters, while he superintended the operations of his syndicate at the Idaho-Alamo-Cumberland group and other mines the syndicate has been

for some time past developing in Slocan district.

Mr. J. J. Fleutot, of Paris, France, who has been interested for years in companies expending money in southwest Alberta and British Columbia, was a visitor to the Kootenay in July.

Mr. A. Fournier, of Kaslo, last summer was appointed liquidator of the Selkirk Mining Co., of which previously he had been manager.

Mr. S. S. Fowler, general manager for the New Canadian Metal Company, early in the year resumed mining in the Blucbell Mine at Riondel, Kootenay lake, and in the summer got the concentrating mill going. The company mined and milled 33,000 tons of load-ore during the second half of the year.

Mr. Colin Fraser, of London, England, formerly chief geologist for the Geological Survey of New Zealand, spent several weeks of the latter part of the autumn in Kootenay district in which he examined a number of mines, chiefly silver-lead and zinc. He went hence to Ontario, and afterward returned to London.

Mr. J. L. Fraser continued the development of the Columbia Coal and Coke Co.'s coal property, between Granite creek and Collins gulch, near Tulameen river.

Mr. H. Frechette, of the Mines Branch of the Canada Department of Mines, Ottawa, was in the province in July, making investigations for the department.

Mr. H. N. Freeman throughout the year remained manager of the Vancouver-Nanaimo Coal Mining Co.'s colliery at East Wellington, Vancouver island.

Mr. A. Gordon French continued his investigations in the vicinity of Nelson. During part of the year he was assisted by his son, Mr. T. French, who came out from the Old Country.

Mr. C. F. J. Galloway examined coal properties in various parts of the province, and made a trip to the Peace River country to look into the prospects for coal there.

Mr. Irving R. Gard, head of the engineering staff of the Canadian Collieries (Dunsmuir) Limited, had his hands full in connection with the large amount of construction work the company undertook last year in Comox district, Vancouver island.

Mr. G. G. Gibbon accompanied Dr. J. Macintosh Bell in his visits to mines in the Province.

Mr. John Gibson, Jun., retired last June from the position of superintendent of the Union colliery in Comox district of the Canadian Collieries (Dunsmuir) Limited.

Mr. Chas. W. Goodale, a well-known metallurgist, came from Butte, Montana, last spring to enjoy a week's golf on the links near Oak Bay, Victoria.

Mr. Thomas Gough, manager of the Kootenay Gold Mines Company's Granite-Poorman group of gold mines and

stamp mill, near Nelson, kept on with the development of those mines and made a fair showing in the quantity of ore mined and crushed, though the year's output was smaller than that of some earlier years.

Mr. A. H. Gracey made a commencement with some new development work on the Venus gold mine on Morning mountain, near Nelson.

Mr. Chas. Graham, superintendent for the Nicola Valley Coal and Coke Co., with coal mines at Middlesbrough, Nicola valley, had the satisfaction of reporting to head-quarters the discovery of a seam of coal not previously known to occur on the property; also that the area of mineable coal has been definitely ascertained to be much larger than it was previously thought probable.

Mr. Thomas Graham at the end of 1911 retired from the position of general superintendent for the Western Fuel Company, Nanaimo, Vancouver island, and on January 1, 1912, became chief inspector of mines for British Columbia. His year's work in the latter capacity has made for more effective inspection of the mines of the province as a whole, particularly the coal mines, his long experience of work in which is of much value to him in his official capacity.

Mr. James Gray, formerly mine manager at Cumberland, Comox district, went to Australia and became manager of the North Bulli Colliery, New South Wales.

Mr. Jay P. Graves, of Spokane, vice-president and general manager of the Granby Consolidated M. S. and P. Co., paid two or three visits to the company's Hidden Creek mines, near Granby bay, Observatory inlet, during the year.

Mr. F. C. Greene, manager of the Graham Island (B.C.) Coal Syndicate, was engaged in boring for coal on the company's land on Graham island, Queen Charlotte group.

Mr. E. A. Griffith continued development work on the Ellis Silver Mining Co.'s Eastmont mine, Ten-mile creek, Slocan lake.

Prof. J. C. Gwillim, of the Kingston School of Mines, Ontario, was again in British Columbia last summer.

Mr. Wm. J. Hamilton was occupied in the laboratory of the Granby Company's smelting works at Grand Forks, Boundary district.

Messrs. Clarence M. and F. T. Hamshaw continued their connection with placer-gold mining in Atlin camp.

Mr. C. Hanckel was engaged in designing a concentrating mill for the Silverton Mines, Limited, the old Wakefield mill, on Four-mile creek, Slocan lake, having been destroyed by fire. Provision was made for the introduction there of a flotation process.

Messrs. Harris Brothers continued the development of their silver-lead property near Hazelton, Skeena River district.

Mr. J. M. Harris remained at Sandon, and retained his local mining interests in the Reco, Slocan Star, Twilight and other Slocan properties.

Mr. Francis H. Hawkins, formerly with the Silverton Mines, Ltd., joined the staff of the Standard Silver-Lead Mining Company, and was fully occupied in survey and other work at the standard mine, near Silverton.

Mr. W. S. H. Hawley, of Spokane, actively managed the affairs of the company that opened the Silver Hoard mine, in Ainsworth camp. Incidentally, he repudiated full responsibility for the highly imaginative "cave" and "prehistoric jawbone" story that was concocted in Nelson.

Mr. Robert R. Hedley, who attended the Canadian Mining Institute meeting in Toronto in March, and went thence to New York, established himself in Vancouver as a practising mining engineer, his engagement with the Canadian Mining Operators Ltd., having been terminated by effluxion of time. Among his other activities he interested himself greatly in the organization that was afterwards developed into the Vancouver Chamber of Mines.

Mr. F. August Heinze, in bygone years intimately associated with mining, smelting, and railway work in Trail creek district, was a visitor to British Columbia after an absence of several years.

Mr. Robert Henderson continued to be manager of No. 4 mine of the Union Colliery, Cumberland, Vancouver island.

Mr. A. E. Hepburn, of Vancouver, directed the attention of prospective purchasers to desirable coal and other mining property in the province.

Mr. E. Hibbert was superintendent of its producing mines for the British Columbia Copper Company, with headquarters at the Mother Lode mine, near Greenwood, Boundary district, at which mine several large blasts brought down a big tonnage of ore.

Mr. Leslie Hill retired from the practice of mining engineering and mine management and removed from Nelson to Vernon, Okanagan valley.

Mr. Lionel Hill remained with Le Roi No. 2, Ltd., at Rossland, and during Mr. Ernest Levy's absence for several months was in charge of the company's mining and concentrating operations.

Mr. Arthur Hickling came from England to British Columbia on one of his periodical visits to the properties of the Princeton Coal and Land Co., Similkameen.

Mr. A. B. Hodges, formerly local manager for the Granby Consolidated M. S. and P. Co., made a trip to Europe and afterward returned to Lima, Peru, to complete the final year of his engagement as general manager for the Cerro de Pasco Mining Company.

Mr. E. Hodgson, of Victoria, beside interesting himself in the affairs of the Pacific Coast Coal Mines Ltd., made several trips to distant places.

Mr. Edwin C. Holden, who some years ago was in charge of the Ymir Gold Mining Company's cyanide plant, but now a professor at the University of Wisconsin, Madison, Wisconsin, visited Kootenay district in July.

Mr. James Holden was manager of the Princeton Coal and Land Co.'s coal mine at Princeton, Similkameen, where, according to published official report, "the general mine conditions compare favorably with the best practice in the province."

Mr. John E. Hooson, after having been mining recorder at Rossland for years, was last summer transferred to Fort Fraser in the capacity of Provincial Government agent there.

Mr. John Hopp had another busy hydraulic season on his several placer gold properties in Cariboo mining division, where his mining operations are on the largest scale of all in Cariboo district.

Mr. P. F. Horton was in charge of the development of the H. B. mining property near Salmo, Nelson mining division, making preparation for the shipment of ore in considerable quantity.

Mr. J. G. S. Hudson, of the Mines branch, Canada Department of Mines, was one of several Dominion officials who last September attended the semi-annual meeting of the Canadian Institute, held in Victoria. He was in the West obtaining data for a new edition of the Mining and Metallurgical Report of Canada.

Mr. Chas. Hussey, manager for Mr. John A. Finch of Spokane, gave much attention to the further equipment of the Standard silver-lead mine and concentration mill, near Silverton, Slocan lake, and had the satisfaction of distributing to shareholders in the Standard Silver-Lead Mining Company nine monthly dividends, totalling \$425,000, during 1912.

Captain John Irving, of Victoria, interested himself in the development of mineral claims in Portland Canal and Southern Yukon districts.

Mr. Robert Irving, of Vancouver, secretary of the Slocan Star Mines Ltd., kept close tab on developments at that company's Slocan Star mine, near Sandon.

Mr. E. Jacobs attended the annual meeting of the Canadian Mining Institute in Toronto last March; went thence on an excursion to Cobalt and Porcupine, in Northern Ontario; returned to Victoria in April after having visited several of the larger cities of the Eastern States and Canada and the nickel-copper smelting works near Sudbury; visited mining camps in Boundary, Kootenay, and Republic districts in the summer; and in November, after a fortnight in the Slocan and a brief visit to Kaslo, Trail, Rossland, and Boundary, attended the American Mining Congress in Spokane, Washington.

Mr. W. H. Trewartha James, formerly general manager for the Tyee Copper Company, left London last July to proceed to Nigeria, Africa.

Mr. G. C. Jaynes arrived at the Surprise mine above Cody, Slocan late in September, to take charge as superintendent on Mr. F. E. Cummins resigning that position.

Mr. Sidney J. Jennings, of Boston and New York, representing the United States Smelting and Refining Company, was at the Standard mine, near Silverton, late in October.

Captain Harry Johns, general superintendent of the British Columbia Copper Company's mining operations in Kootenay district, directed the development of the L. H. mine, near Slocan lake, and the Eureka mine near Nelson, both under option of purchase, and late in the year commenced shipping ore to Greenwood from the Queen Victoria mine, near Beasley siding, Kootenay river.

Mr. Jas. J. Johns continued in charge of the British Columbia Copper Company's Mother Lode mine, near Greenwood, under Superintendent E. Hibbert.

Mr. H. H. Johnson, of the mining engineering firm of Johnson & Hoffman, of London, England, was in British Columbia in the autumn, investigating mining properties.

Mr. R. Campbell Johnson, of Vancouver, reported on coal and other mineral claims during the year.

Mr. Gomer P. Jones, manager for the Hedley Gold Mining Company, operating the Nickel Plate group of mines and 40-stamp mill in Hedley camp, Similkameen, had the largest yearly results in both production and profits in the history of that well-known gold-mining enterprise.

Mr. Frederic Keffer, engineer and geologist for the British Columbia Copper Company, had a busy year, the first half directing development work on a number of properties the company was working under option of purchase, and the second half as acting general manager following the death of the late Mr. E. G. Warren. In September Mr. Keffer made a trip to Portland, Oregon.

Mr. Henry Kehoe was one of the western members of the Canadian Mining Institute who attended the annual meeting in Toronto last March. After having spent several months in Ontario he returned to Spokane.

Mr. L. O. Kellogg, of Tacoma, Wash., was one of the mining engineers who last October examined the Standard silver-lead mine, near Silverton, for the U. S. Smelting and Refining Company.

Mr. Thos Kiddie, after reporting to his principals the negative results of his investigations in connection with Mr. A. Gordon French process for the reduction of zinc-lead, returned to Arizona. The latter half of the year he spent in Southern California, where he took Mrs Kiddie for the benefit of her health.

Mr. B. Kirk was assisting in the examination of mineral claims on Moresby island of the Queen Charlotte group last autumn.

Captain Guy H. Kirkpatrick of Vancouver, was associated with the Messrs. Leckie in the examination of various mining properties in the Coast district.

Mr. John Kirkup, gold commissioner for Trail Creek mining division, completed a lengthy period of duty at Rossland prior to removal to Alberni Vancouver island.

Mr. Geoffrey B. Kitto, superintendent of the smelting works at Ladysmith, Vancouver island, left that establishment on the Tyee Copper Company ceasing smelting operations there pending the making of arrangements for a larger supply of ore than latterly had been obtainable.

Mr. H. E. Knoebel, formerly of Portland Canal, came from Alberta to Victoria on a visit in October.

Mr. Wallace Knowles superintended mining work at the Nickel Plate mines, Hedley camp, and made a good showing in both development and ore production.

Mr. Frank C. Languth erected the Merrill plant at the Motherlode gold stamp-mill in Sheep Creek camp, Nelson mining division.

Mr. Arthur Lakes, Jun., manager of the Wilcox mine, Ymir camp, had the misfortune to break his leg last spring. After recovery he resumed duty at the Wilcox, where, during part of the year he had as his guest his father, Mr. Arthur Lakes, Sen., a well-known contributor to technical mining journals.

Mr. A. G. Langley, of Vancouver, maintained his business connection with the mining industry.

Mr. H. Mortimer-Lamb, secretary of the Canadian Mining Institute, was in British Columbia last September, having come West to hold the semi-annual meeting of the Institute in Victoria.

Mr. Andrew G. Larson, of Vancouver, did much travelling during the year, in connection with the examination of mining properties in various parts of the province—on Queen Charlotte islands, in Portland Canal mining division, in Kootenay district, and elsewhere.

Mr. B. A. Lascelle made Vancouver his headquarters during the year.

Mr. Frank Lathe remained in the Granby Consolidated Company's laboratory at the big copper smelter near Grand Forks, Boundary district. In June the "Engineering and Mining Journal," New York, published a contribution of his entitled "Copper Determinations at Granby."

Mr. H. H. Lavery, formerly superintendent of the Monarch mine, near Field, was in Boundary district in the spring.

Mr. Chas. F. Law, Vancouver, continued to give attention to placer property in the vicinity of Tulameen river, above Otter flat.

Mr. Douglas Lay, superintendent for the Van-Roi Mining Company, with silver-lead-zinc mine and concentrating mill near Silverton, Slocan lake, went

to England on a three months' vacation from which he returned at the end of October. During his absence Mr. D. J. Browne superintended operations at mine and mill.

Mr. W. W. Leach, of the Geological Survey of Canada, was in Victoria late in the autumn after having spent the field season in southwest Alberta. He returned to Ottawa after a short stay on the coast.

Captain John E. Leckie came from Cobalt to Vancouver and joined Lieut. Colonel R. G. E. Leckie, who was previously there, in the examination and development of mining properties.

Mr. Fred E. Lee left the Consolidated Company's laboratory at Trail in the autumn to spend a long vacation in the prairie country east of the Rockies. He had been engaged in special research work at Trail.

Mr. W. M. Leete in the summer left for Yankee Girl mine, in Ymir camp, the property having been bonded by Spokane men who put in another superintendent.

Mr. R. S. Lennie, of Vancouver, was prominently connected with the transfer of mining interests to operators prepared to do important development work.

Mr. O. E. LeRoy, of the Geological Survey of Canada, spent part of the field season in Kootenay in connection with arranging the itinerary for the International Geological Congress western excursion, to take place next September. Before returning to Ottawa he attended the Canadian Mining Institute meeting at Victoria near the end of September.

Mr. Ernest Levy, manager at the mines at Rossland of the Le Roi No. 2, Ltd., returned to that camp in May from a trip to England.

Mr. R. H. Ley removed from Nelson to Vancouver last June to join the staff of the Giant Powder Company, Inc.

Colonel N. E. Linsley of Spokane Washington, in August, examined mineral claims in Summit camp, Tulameen district, about 20 miles from Otter flat, where there are excellent showings of silver-lead ore.

Mr. David Little, formerly superintendent at the Second Relief mine, Erie, and afterwards at the Motherlode mine, Sheep creek, left the latter camp in July on a visit to Republic, Washington.

Mr. Douglas C. Livingston, who was with the Tyee Copper Company prior to going to Mexico, and is now associate professor of mining engineering at the University of Idaho, Moscow, Idaho, was in Rossland camp last April with a party of mining engineering students from Moscow.

Mr. Thomas G. Lloyd, in charge of underground work at the Van-Roi mine, Silverton camp, was married in Victoria on September 26, to Miss Mummery.

Mr. J. Ralph Lockard succeeded Mr. John Gibson, Jr., as superintendent of the Union Colliery, in Comox district, Vancouver island.

Mr. George Long had charge of development work at the Lily B. mine, in Slocan City mining division.

Mr. F. J. Longworth, after having been for some time assistant superintendent at the British Columbia Copper Company's smelter at Greenwood, went back to his former position as superintendent of the company's Napoleon mine, near Boyds, Washington.

Mr. R. Mabry, of Spokane with associates, acquired mining properties in Ainsworth, Slocan City, and Nelson mining divisions. Latterly his most important operations in Kootenay were at the Yankee Girl mine, Ymir camp.

Mr. C. O. Mailloux, of New York, who after the change of president of the Granby Consolidated M. S. and P. Company was last autumn appointed assistant to the new president, visited the various properties of the company in British Columbia and reported favorably thereon.

Mr. G. S. Malloch, of the Geological Survey of Canada, spent the field season of 1912 in the Groundhog country, continuing his examination of the coal basin there. He found the dimensions of the field to be, roughly, 30 by 45 miles, but that the coal-bearing horizon had been removed by erosion from a large part of that area.

Mr. W. S. Marshall remained as chemist and assayer for the Tyee Copper Company at smelting works at Ladysmith throughout the year's operations there.

Mr. John Matthews, formerly manager of several of the mines of the Union Colliery, Comox district, Vancouver island, removed to Vancouver after resigning his position at Cumberland.

Mr. J. F. Menzies, general superintendent of the coal department of the Northwestern Improvement Company at Roslyn, Washington, visited some of the Crow's Nest Pass coal mines last November.

Mr. Chas. W. Merrill, of San Francisco, was at the Motherlode mine, Sheep creek, in connection with the installation there of gold-milling plant.

Mr. I. L. Merrill president of the Hedley Gold Mining Company, in October paid one of his periodical visits to Hedley, Similkameen, the company's headquarters in British Columbia.

Mr. H. R. Metcalf, of Pittsburg, Pennsylvania, vice-president of the Draeger Oxygen Apparatus Company, attended the Canadian Mining Institute meeting held in Vancouver in February, 1912.

Mr. F. Chas. Merry continued to superintend mining operations at the Silver Cup and Nettie L. groups of mines, in Ferguson camp, Lardeau district. Late in the year favorable reports were made of production prospects at the latter property.

Mr. Thomas Morgan, senior inspector of coal mines made Nanaimo his headquarters, the office of the chief inspector of mines having been removed from that city to Victoria.

Mr. R. Marsh, for several years connected with mining in Rossland camp, afterwards at Spokane, was fully occupied in Republic camp last summer.

Mr. C. C. Michener was at the head of the Pacific Coast Coal Mines, Ltd., operating the Fiddick mine at South Wellington, and developing the Suquash mine in the northern part of Vancouver island.

Mr. C. K. Milbourne, of London, a director of the Velvet Mines, Ltd., was at Rossland in July, investigating the local situation in respect of the company's property near Rossland.

Mr. J. A. Miller remained at the Granby Company's big copper mines in Phoenix camp, at which he has been for several years.

Mr. J. F. Miller, superintendent of the Consolidated M. and S. Co.'s electrolytic lead refinery at Trail, beside ordinary operations, had charge of additions to the plant to enlarge its output capacity of refined lead.

Mr. J. C. Moen was working the Black Prince mine, in Slokan City mining division, and expected to again make it a producing property.

Mr. E. C. Montgomery was assistant superintendent at the Consolidated M. and S. Company's Centre Star-War Eagle group of mines, in Rossland camp.

Mr. J. W. Montgomery remained as manager of Northfield (Brechin) mine of the Western Fuel Company's colliery at Nanaimo.

Mr. J. W. D. Moodie, who took charge of the Britannia Mining and Smelting Co.'s big property near Howe Sound late in 1911, made many important improvements both surface and underground, during last year.

Mr. J. E. Moran managed the affairs of the Otter Creek Development Company in Atlin camp.

Mr. D. D. Muir, Jun., of Seattle, Washington, had charge of an examination of the Standard mine, near Silverton, made in October.

Mr. L. Muller spent another season on the hydraulic placer-gold properties of Mr. John Hopp, in the neighborhood of Barkerville, Cariboo mining division.

Mr. E. C. Musgrave returned to Victoria from Mexico late in the year and arranged to spend several months in that city.

Mr. Robert Musgrave paid a business visit to the Chilcoten country in April, looking into the prospects for mining in that part of the province.

(To be continued next month.)

MORE ORE UNCOVERED

In the north drift on the 185-foot level in the No. 3 vein, the Harris Mines has just uncovered another shoot of fine galena two feet in width and of high grade, says the "Omineca Miner" of the 15th inst. The ore, which was found 80 feet north of the shaft, has been followed for 10 feet and is still in evidence.

PYRITES IN BRITISH COLUMBIA

The Mines Branch of the Canada Department of Mines recently issued a Report (No. 167) on "Pyrites in Canada," by Dr. Alfred W. G. Wilson, chief of the Metal Mines Division. This report deals with the occurrence, exploitation, dressing and uses of pyrites. In the course of his introduction Dr. Wilson, after giving some information relative to sulphur, observes:

"Native sulphur is not known to occur in Canada in commercial quantities; pyrites has been found in many localities, but it is mined only at a few places. The present rapid expansion of our manufacturing industries, and the projection of a number of large sulphide pulp mills, have started many inquiries regarding our supplies of this ore. Moreover, some of the industries in the adjacent republic, especially those situated in the region of the Great Lakes, are also in need of additional supplies of ore. If pyrites ore of a suitable grade can be produced in Canada, with the assurance of a reasonably steady output, there is now available a large and immediate market for this product. The present bulletin has been prepared in response to numerous inquiries respecting the pyrites resources of Canada."

The report is illustrated with reproductions of photographs, drawings, and maps.

The only excerpt now made is that dealing with pyrites in British Columbia, (pp. 85-6) as follows:

"The mineral pyrites is reported from many localities in British Columbia. For the most part these occurrences are associated with gold or copper ores, and the deposits are not valuable because of the sulphur content of the ore. At the present time no pyrites is mined in British Columbia for its sulphur, nor so far as the writer was able to learn, is any imported. The sulphides which are mined are smelted to recover copper and the precious metals, and the sulphur is burned off. It is possible that in the future, with the development of manufacturing industries, there may be a market for the sulphur content of suitable ores. Present needs are satisfied by the importation of Japanese raw sulphur, which costs between \$17 and \$18 a ton, in cargo lots at seaboard points.

"There are two localities at which pyrites deposits occur that are worthy of special mention, namely, (1) the Hidden Creek property of the Granby Consolidated Mining, Smelting, and Power Company, and (2) an occurrence on the Ecstall river about 35 miles above Port Essington, owned by the British Columbia Pyrites Company.

"Hidden Creek—This property is situated about three-quarters of a mile from tidewater, on Granby Bay at the head of one of the arms of Observatory Inlet. It is now controlled by the Granby Consolidated Mining, Smelting, and Power Company, which owns 14 claims and has mining rights in several others. This company has been for about two years exploring and developing this prospect as a copper property, and it is probable a smelter will be erected here in the near future.

"A large body of sulphide ore has been developed by a system of tunnels and

supplementary diamond-drilling. A tonnage estimated at about 6,000,000 tons of two per cent. (copper) ore, or about 12,000,000 tons of 1.65 per cent. ore, has been shown to be present. In addition, development work has shown a very considerable tonnage of ore of a higher grade—above 5 per cent.—and a large tonnage of low-grade. A large force is now employed in preparing the property for operation on a large scale as a copper mine.

"Much of the ore which occurs on this property is almost pure sulphides with high sulphur content, and a large tonnage occurs that is nearly pure pyrite.

"Under present conditions there is no market for the sulphur content of the ore and, as a consequence, the sulphur will be burned off and discharged into the air in the process of smelting. Should it be warranted by market conditions at any time before the deposit is exhausted, a large tonnage of pyrites with a low copper content will be available from this mine. As the mine is practically at tidewater, it would be comparatively easy to deliver the ore very cheaply at any point on the coast. After treatment in a roasting furnace to recover the sulphur content, the cinder could easily be subjected to treatment to recover the copper and other value which it would contain.

"Ecstall River—This property is situated on Red Gulch creek, a tributary of the Ecstall river, at the head of tidewater, and about 35 miles above Port Essington. The portal of a prospecting tunnel, which is driven into the ore, is about 2400 ft. from the river. There is said to be an iron-stained sand on the west side of the creek, presumably pyrites, traceable for several thousand feet and varying in width from 12 to 200 ft. The writer visited the prospect tunnel on Red Gulch creek but was not able to visit the outcrop on account of the weather conditions. The sill of the tunnel portal stands only a few feet above the creek and the tunnel is driven into the side of the gulch. At about 50 ft. from the entry it cuts an orebody of almost pure pyrite about 15 ft. in width. Ore has been stoped out on each side of the tunnel for about 20 ft. and the full width of the ore shoot.

"Outcroppings showing pyrite are said to occur in a number of other places farther up the creek, and on the side of the valley. These were not visited. Exploratory work has been confined to the opening of this tunnel.

"A sample shipment of ore from the tunnel, said to be about 100 tons, is reported to have been made to the Chemical Works at Victoria. The test of the trial shipment of ore showed that it is a very satisfactory ore for acid-making.

"Samples that were assayed showed small value in gold, silver, and copper. The sulphur content varied from 40 to 48 per cent.

"Further exploratory work is required to definitely determine if the pyrites ore bodies on this property are large enough to be operated economically. At present there is no market on the coast for ore of this character, and no work is being done on the orebodies."

Last year in the Omineca district there were 649 mineral claims recorded and 1023 miner's licenses issued.

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EDITORIAL

The Western Branch of the Canadian Mining Institute is to be heartily congratulated on the success and usefulness of its fourteenth general meeting, held at Nanaimo Vancouver island, which city was appropriately described, by Mr. Thos. R. Stockett, manager of the Western Fuel Company, as being "the oldest coal-mining centre on the Pacific Coast." It is true the attendance of members of the Institute was not numerous, but while this is to be regretted, it is easily accounted for, the position having been simply that most of those who usually take an active part in the Coast meetings of the branch were at the time in distant parts and so were unable to attend, while urgent business engagements prevented the attendance of at least half-a-dozen island coal-mine officials who also are members. But these drawbacks, notwithstanding, there was a good attendance of interested non-members, an excellent programme of business was prepared, and generally results were of distinct value and usefulness. Further, the already existing spirit of kindly mutual interest and co-operation between coal-mining men of Nanaimo district and

these from the neighboring State of Washington was broadened and strengthened, to the advantage and gratification of prominent representatives of both parties immediately concerned. The informative paper by Mr. Geo. Watkin Evans, consulting coal mining engineer, of Seattle, entitled, "Some Notes on the Groundhog Anthracite Coal Field," giving the writer's conclusions on the commercial value of that field, was a conservative statement of the facts as they presented themselves to Mr. Evans after he had, in 1912, examined a considerable portion of the field, and was in distinct and praiseworthy contrast to some of the wild and extravagant accounts of this field that had been published. Again, the great practical value of the paper by Mr. J. F. Menzies, of Roslyn, Washington, general superintendent of the Coal Department of the Northwestern Improvement Company, on "Mine-Rescue and First-Aid Work," read before a large gathering of workers in coal mines—just the class of men most vitally affected by such matters—was plainly manifest, for close and earnest attention was paid as Mr. Menzies told of his own considerable experience in such work with the large numbers of men under him. Then, there was not a coal-mining man present who did not learn something from Mr. Henry Clark's interesting illustrated address on "Modern Surface Equipment of Coal Mines." For the visitors, too there was the additional advantage of having been shown the important developments in progress at the Western Fuel Company's new mine near Nanaimo and having received first-hand much reliable information concerning this intended expansion of that company's operations. Of course there were other commendable features of the proceedings, but enough has been written to adequately indicate the general utility of the meeting. Just a word or two, though, in conclusion, of appreciation of the heartiness of the welcome extended to the visitors by the Mayor of Nanaimo; the thorough-going efforts of the officials of the Western Fuel Company to promote the success of the meeting, and the comfort and pleasure of the visitors; and the generous measure of publicity given to the proceedings by the local press.

Attention is directed to the interesting article on the properties of the Surf Inlet Gold Mines, Ltd., which appears in this issue on another page. A good deal of Vancouver money has been invested in this proposition, a good deal of hard work done, and now it looks as if the

property is going to add one more to the list of valuable Coast mines which, if present indications go for anything, will make the mining districts of the British Columbia seaboard as fine ore-producers as any on this continent at no very distant date. It is a pleasing sign that, in the case of the Surf Inlet Gold Mines, Ltd., it is Vancouver men, and, to a large extent, Vancouver capital, through which the present satisfactory position of the property has been achieved.

Though far enough from British Columbia the republic of Mexico has always been so closely linked with the mining industry that no mining man of the right sort but has observed with sorrow the deplorable conditions which have prevailed within its borders since the very unwise deposition and banishment of ex-President Porfirio Diaz a short time ago. At the time of that event the B. C. Mining Exchange was probably almost the only publication which paid to the exiled man the fair tribute of praise for the good work he had done for Mexico, and pointed out that the only result of this political blunder would most likely be to throw the country back into the chaos out of which Senor Diaz had raised it. That our forecast was true is amply evidenced by the events of the past few months, culminating now in the deposition and execution of the man who succeeded in ousting Senor Diaz from the place he had so long and worthily occupied. Whether President Huerta is a strong enough character to administer the affairs of Mexico with the firm hand which they require remains to be seen. The outlook, however cannot be said to be promising. While the United States Government has very wisely and properly refrained from any intervention in Mexican affairs, it is well-known that powerful and unscrupulous commercial interests in the United States are supplying arms and money to every organization that rebels against constituted Mexican authority. This was done in the case of Diaz, was done in the case of Madero, and is being done in the case of Huerta. What the end will be is difficult to foresee.

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LATEST METAL MARKETS

(From Chicago Mining and Engineering World.)

Silver—Quotations for silver per fine ounce at New York and per standard ounce at London for the week ending February 26, were as follows:

	New York Cents	London Pence
Feb. 20	61½	28½
Feb. 21	61½	28½
Feb. 22	61½	28½
Feb. 24	61	28 1-16
Feb. 25	60½	27 15-16
Feb. 26	60½	27 13-16

MONTHLY AVERAGE PRICES OF SILVER

Month.	New York			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	63½	61½	62.928	56.259
February				59.043
March				58.360
April				59.265
May				60.754
June				61.265
July				60.615
August				61.600
September				63.364
October				63.504
November				62.750
December				63.390
Year				60.837

Copper—Although electrolytic copper was quoted all the week at 15 cents sales were made at from 14 5-8 to 15 cents delivered 30 days. Although some buying was done on domestic account at these figures, business was light. Foreign sales for the greater part were made at from £67 15s to £68 10s. In the domestic market some buying was done for February and March shipment at as high as 15 cents delivered 30 days, and down to 14 3-4 cents for producing interests. Smaller interests and second hands sold between 14.55 cents and 14 3-4 cents cash for March and April shipment.

On Thursday a partially successful effort was made to steady the market, but consumers were less inclined to buy at the advance asked. On Friday electrolytic was offered in Europe at £68 5s to £68 10s.

The exports of copper reported from New York on Friday were only 163 tons, but the total for the week ending February 20 was 7444 tons, and since the first of the month 23,068 tons.

The imports reported Friday, including 400 tons of pig copper and 45 tons of matte from Australia. The arrivals at Atlantic ports for the week ending February 20 included 830 tons of copper, 75 tons of matte and 60 tons of ores. Since February 1 imports by steamers only at Atlantic ports included 2545 tons of copper, 1575 tons of matte and 2065 tons of ores.

Quotations for copper per pound at New York and per long ton of 2240 lbs. at London for the week ending February 26, were as follows:

	Lake.	Elec.	Cast	Standard London
Feb. 20. 15½—	15—	14½—	£64	5 0
Feb. 21. 15½—	15—	14½—	64	7 0
Feb. 22. 15½—	15—	14½—	64	7 0
Feb. 24. 15½—	15—	14½—	64	15 0
Feb. 25. 15½—	15—	14½—	64	0 0
Feb. 26. 15½—	15—	14½—	64	0 0

MONTHLY AVERAGE PRICES OF COPPER

Month.	New York—Lake Superior.			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	18	16½	17.116	14.526
February				14.606
March				14.911
April				16.092
May				16.391
June				17.612
July				17.536
August				17.694
September				17.724
October				17.753
November				17.750
December				17.750
Year				16.695

Month.	New York—Electrolytic.			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	17½	16½	16.983	14.425
February				14.435
March				14.853
April				16.003
May				16.326
June				17.505
July				17.418
August				17.694
September				17.706
October				17.745
November				17.750
December				17.750
Year				16.634

Tin—The tin market was unsettled last week, with a downward tendency. Spot and nearby positions fluctuated from 12 to 3-4 cent in the local market. Some interest was shown in future positions, but operations in 25-ton lots were of an intermittent character. Buying by consumers for interior shipment was somewhat disappointing, but there was more speculative activity in the London standard market. On Friday the tone of the market was somewhat firmer, with sales of 10 tons spot at the Exchange at 48 1-2 cents.

The arrival of tin last week were 550 tons and 4375 tons are now afloat for U. S. ports.

The London market for standard contracts recovered 10s on spot and 15s on futures on Friday, making the net decline for the week £2 on spot and £3 5s on futures. The turnover on Friday was 590 tons.

The Singapore market receded £3 on Friday, making the net decline for the week £4 10s, the closing price being £215 15s c. i. f. London.

Quotations for tin at New York and at London for the week ending February 26, were as follows:

	New York	London
Feb. 20—48.62½—48.37½	£218	0 0—214 0 0
Feb. 21. 48.67½—48.50	218	10 0—214 15 0
Feb. 22. 48.62½—48.50	218	10 0—214 15 0
Feb. 24. 47.95—47.85	215	15 0—210 15 0
Feb. 25. 48.00—47.75	215	0 0—208 0 0
Feb. 26. 48.00—47.50	217	0 0—210 5 0

MONTHLY AVERAGE PRICES OF TIN

Month.	NEW YORK.			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	51.25	49.50	50.414	43.275
February				43.345
March				42.690
April				43.970
May				46.055
June				48.046
July				44.665
August				45.849
September				49.232
October				50.073
November				49.869
December				49.899
Year				46.330

Lead—Lead was dull but steady during last week. On call at the New York Metal Exchange spot, February, March and April offered at 4.35 cents, with 4 1-4 cents bid, on Friday. For

East St. Louis delivery spot, February, March, April and May offered at 4.22 1-2 cents, with 4.12 1-2 cents bid, on Friday.

London advanced 2s 6d net during the week. Soft Spanish closed at £18 12s 6d, against £16 7s 6d on Friday.

Quotations for lead at New York and London for the week ending February 26, were as follows:

	New York Cts. per lb.	London Per Ton
Feb. 20	4.35—4.25	£16 12 6
Feb. 21	4.55—4.25	16 12 6
Feb. 22	4.35—4.25	16 10 0
Feb. 24	4.35—4.25	16 12 6
Feb. 25	4.35—4.25	16 7 0
Feb. 26	4.35—4.25	16 7 0

MONTHLY AVERAGE PRICES OF LEAD

Month.	New York			
	1913	1913	1913	1912
	High	Low	Avg.	Avg.
January	4.37½	4.25	4.301	4.435
February				4.068
March				4.167
April				4.213
May				4.164
June				4.395
July				4.669
August				4.581
September				5.071
October				5.088
November				4.633
December				4.300
Year				4.182

Spelter—On call at the New York Metal Exchange spot offered at 6.35 cents, with 6 1-4 cents bid; February offered at 6.30 cents, with 6.20 cents bid; March offered at 6 1-4 cents, with 6.15 cents bid; April offered at 6.20 cents, with 6.10 cents bid; May and June offered at 6.15 cents, with 6.05 cents bid, on Friday. On call at the Metal Exchange for East St. Louis delivery spot and February offered at 6.15 cents, with 6.05 cents bid; March offered at 6.10 cents with 6 cents bid; April offered at 6.05 cents, with 5.90 cents, bid; May and June offered at 6 cents, with 5.90 cents, bid, on Friday.

London declined 5s net during the week. G. M. B. closed at £25, against £25 5s on the preceding Friday.

Spelter quotations at New York and London for the week ending February

	New York Cts. per lb.	London Per Ton
Feb. 20	6.35—6.25	125 0 0
Feb. 21	6.35—6.25	25 0 0
Feb. 22	6.35—6.25	25 5 0
Feb. 24	6.35—6.25	25 0 0
Feb. 25	6.35—6.25	25 0 0
Feb. 26	6.25—6.15	25 0 0

MONTHLY AVERAGE PRICES OF SPELTER

Month.	New York				London.			
	1913	1913	1913	1912	1913	1913	1912	1912
	High	Low	Avg.	Avg.	Avg.	Avg.	Avg.	Avg.
Jan. 7.40	6.40	7.192	6.505	26.115	26.721			
Feb.			6.541		26.457			
Mar.			6.817		26.035			
April			6.799		25.646			
May			6.85		25.520			
June			7.011		25.765			
July			7.229		26.173			
Aug.			7.042		26.434			
Sept.			7.553		27.067			
Oct.			7.550		27.551			
Nov.			7.429		26.756			
Dec.			7.331		26.880			
Year ...			7.053		26.317			

The B. C. Oilfields Limited, who are drilling for oil on the west coast at Tihan Point, are pushing operations as rapidly as conditions will permit says the "Queen Charlotte Islander" of the 10th inst. At the present time the drill isg down to a depth of over 200 feet.

Coast and Island Mining

The Surf Inlet Mines, Ltd.—Progress at Portland Canal—Good Outlook for Season in Bear River

Mining Division—Work on Queen Charlotte Islands—General.

SURF INLET GOLD MINES

The Surf Inlet Gold Mines are situated on Princess Royal island on the west coast of British Columbia, about 400 miles north of Vancouver. The island, which is about 60 miles long and 2 1/2 to 30 wide, is a mass of rugged mountains with heavily timbered valleys and beautiful fresh water lakes, making it an ideal country to live and operate mines.

The first discovery of gold quartz was made many years ago by an Indian who reported the find to some Victoria

feel sure, have made for them the success the eastern investors anticipated.

During the operations of the property some miner traced the fault line across the creek and up the mountain side opposite Princess Royal camp, and discovered the large outcroppings of ore that is now the Surf Inlet gold mines.

In some way Mr. E. A. Cleveland, civil engineer, of the firm of Cleveland & Cameron of this city, became interested in the property and attempted in a serious way to make a mine out of it. About this time work closed down on the Princess Royal claims and Cleve-

to fifteen men working, with a well-equipped camp, including complete assayer on the ground, enabling us to keep informed on values of ore as developed. A very necessary thing in a gold camp.

The country formation of Princess Royal island is mostly granite, called locally "coast granite," rather dark in color and somewhat stratified. The ore bodies are very well defined and were formed along a great fault line. The fault has been subjected to a great amount of sheering and crushing along its course. The effect of this great



Mountain Scenery, Princess Royal Island, B. C.

people. An investigation was made resulting in the discovery of the quartz vein and location of the ground now known as the Princess Royal mines. Eastern people became interested in the property and a large amount of development was done. Ore was mined and shipped in small quantities, but eventually the work was given up because it did not return a profit. This gave the camp a black eye, and for some years it was difficult to get mining men to visit the camp to investigate for themselves the merits of the mines.

The real cause of failure it is not for me to say, but I understand they were sorting and shipping the ore to smelters and packing it out on horses to salt water. I am sure no profit could be made on the ore in this way, and I suggest that this was the cause of failure. They have nice ore, and a small mill installed on the ground would, I

land being unable to interest capital to assist in continuing development finally closed the camp down. About four years later the camp was brought to the notice of Mr. Clabon by some interested parties in the East, and it was arranged that I should make the trip in to examine both properties.

Late in the fall of 1909 I made the trip, spending about ten days in the camp, and after returning to Vancouver secured an option from Mr. Cleveland for Mr. Clabon and myself. In the following spring I took some men in over the snow on snowshoes and commenced work on our bond. The results were so good that we at once formed the Surf Inlet Gold Mines Company, interesting prominent Vancouver business men who have carried on continuous work since that time.

Though we are isolated from steamer routes we have a regular force of twelve

rock movement has in places been very marked, brecciating and altering the granite rock for a distance of 50 ft. to 100 ft. from the main fracture. The ore is a hard rose quartz, carrying iron pyrite, outcropping boldly where cut by small creeks.

Work has been done and ore proven for some miles along the fault line, or mineral belt, but no large amount of work has been done except on the Surf Inlet Gold Mines property and the old Princess Royal Company's claims which adjoin this property on the south.

There are often two parallel veins, and where the altered rock exists these veins or ore chutes, seem most apt to form along the outer sides and in the contact of the solid granite and the altered rocks. The country has been very much eroded by glaciers, which have left a hard and unoxidized surface to all ore outcroppings, practically doing

away with surface accumulations of values from weather effects, and from a close observance of the ore as development attains depth, I would say that there was no re-enrichment of these veins near surface, and that the gold values established at present will be permanent.

The quartz veins so far developed are rather small except on the Surf Inlet property, where the vein has been proven to be from 10 ft. and up to 20 ft. wide.

A strong feature of this mineral belt is that there never seems to be barren quartz bodies. The values may go low, and do in places, but wherever a shoote of quartz exists it is safe to figure on gold values sufficient to pay to mine, while the better grade ore runs up to \$100 at times, and even higher, often showing free gold specimens.

Development

On the Surf Inlet property there are two veins called the east and west veins. The west vein is running at such an angle that we expect it to form a junction with the main vein at such an angle that we expect it to form a junction with the main vein at some point ahead of our present workings. Both of these veins have been cut to some depth by a small creek, and development of each has been by drifting in on the vein from this creek. The west vein has been drifted on for 150 ft. and the vein crosscut in several places, proving an ore body from 4 ft. to 10 ft. wide, and containing some remarkable high gold values, with an average of about \$20 per ton.

At a level of about 150 ft. vertically below this work the No. 2 tunnel was run in on the main vein. This drift has just reached the 630 ft. mark. It has continued on ore all this distance and has proven one of the most valuable gold ore bodies in the province.

It has been my practice to continue the tunnel along the footwall side of the vein wholly or partly in the ore, then crosscut to the hanging wall at intervals of 50 ft.

Throughout all this work the vein is shown to be a most perfect type of fissure vein, and varying from 10 ft. up to 20 ft. in width. This tunnel attains a depth of 400 ft. following the vein. A shaft has been sunk from surface down on the vein 50 ft., and vein crosscut at bottom showing width 18 ft. at that point.

At about the 150 ft. mark in the tunnel it is crosscut 16 ft. wide, at 350 ft. fully 15 ft., at 400 ft. 12 ft., at 450 ft. 20 ft. with no point less than 10 ft. up to the 600 ft. crosscut, which we have just completed, where the clean ore is proven 20 ft. thick. This is the deepest point yet developed in the mine, and the ore body seems to be the largest and best average values. Carload samples of ore from this crosscut run as high as \$35 per ton, and the ore body will average about \$15 per ton in gold for the 20 ft.

I estimate the average width of this vein at 12 ft., which is easily inside the mark.

At the present time we are pushing the main drift ahead along the ore body, and upraising to bottom of 50 ft.

shaft, a distance of over 200 ft., which will prove the ore body between these points and give air to our workers below.

A crosscut drift has been driven from main tunnel to cut the west vein at this level and prove territory between.

On the country some of our best surface territory is on ahead, and I believe after machines are installed large ore bodies will be developed in that direction by following the sheered zone, as we are doing at present with such good results.



Entrance to No. 2 Tunnel in Winter, Surf Inlet Gold Mines, Princess Royal, B.C.

Ore has been encountered, but we are not sure at present whether the real vein has been cut or not. Some remarkably high values have been obtained, but it is possible that the larger ore body has not been reached yet by this work.

While at the 600 ft. crosscut the ore body is very large, still it is probable that the west vein exists somewhere near by, and in the hanging wall of the altered rock belt, which at this point is probably about 100 feet thick. It is my intention to make a thorough crosscut to the solid granite by continuing the 600 ft. crosscut, which will prove this point.

This ore choote is proven to be over 700 ft. long and the strongest showing developed; is the deepest down and farthest into the hill. It is impossible to say how much further this ore choote will continue without a break but there is no good reason for it to quit for some time.

The Company's ground covers nearly a mile in length along this fault line, all of which will be developed in time and no doubt many good ore chootes will result.

The present tunnel level is several hundred feet above the creek, and a tunnel can be run under this ore body for several levels with moderate cost for amount of ore such work would develop.

While it is true that until the upraise is completed there is not much ore technically developed, yet with an ore body of this character and proven to be so well defined, quite an amount of latitude can safely be allowed an engineer in attempting an estimate of ore developed.

Presuming that the vein, as shown in all the development work, is to be a fair average of the ore through to surface, there would be at least 150,000

tons of ore above the No. 2 tunnel. The ore body averages stronger throughout the tunnel than the surface showings, so I consider ore figured below this tunnel for a reasonable distance perfectly safe figures base to reckon on. If you allow the first hundred feet below you have 70,000 tons, making 220,000 tons practically in sight to begin milling on and this is without bringing the west vein into the figures at all.

Values

Regarding the values, which is all in gold, while some parts of the vein are low there are no barren areas, and to offset these some very rich ore exists. \$8 to \$10 ore is most common, and we hope to make an average of about \$10 in the mill.

Ore Treatment

The treatment of the ore has been given some exhaustive tests during this season. The last test was made on a one ton sample taken from all parts of the ore bodies. This was placed in the hands of Mr. C. E. Verrill, an expert mill man of this city. The ore was tested in the works of Falkenburg & Lucks' testing plant in Seattle. The results of these tests have been particularly satisfactory, and resulting in settling on the most simple method of treatment of the ores and making about the highest saving known on any plant.

The ore carried fully 10 per cent. iron sulphides, in a brittle and clean quartz, which admits of a very clean concentration, but it was found that both the iron sulphides and the quartz sands yielded a high saving by simple cyaniding. So tests were made of fine grinding the straight ore and cyaniding the whole product. This gave such good results that this simple process has been recommended to the company.

FRED M. WELLS.

PROMISING OUTLOOK FOR PORTLAND CANAL AND SALMON RIVER CAMPS

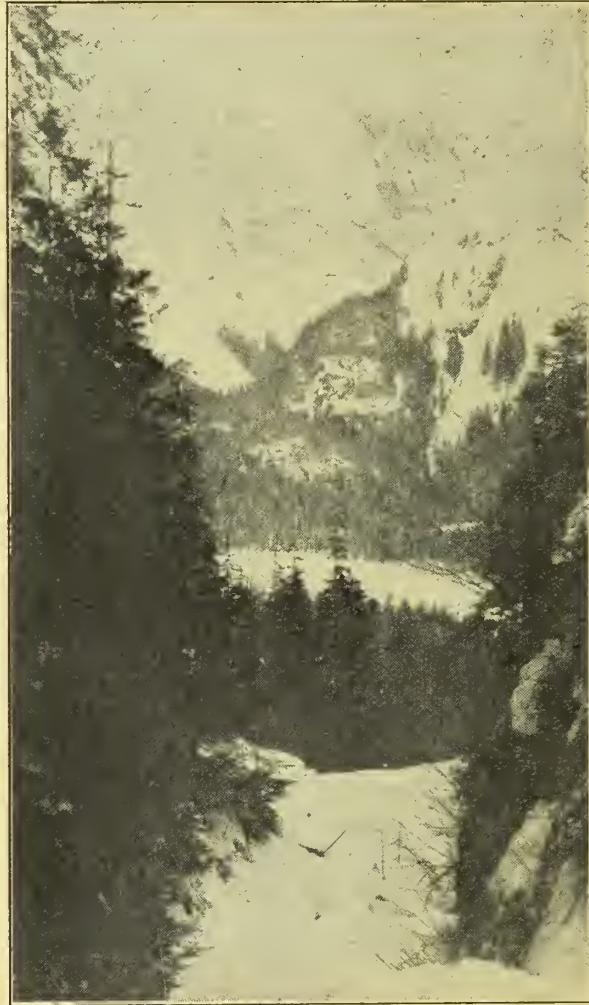
The "Portland Canal Miner" of the 8th inst. says:

Though spring is some weeks off "The Miner" is already justified in predicting that mining development, particularly in the Salmon river section of the district, will be much greater than 1912. Last year both owners and prospectors mainly concentrated their energies towards opening up the numerous showings in the Salmon river belt, and the development undertaken proved more than satisfactory on such properties as the Cascade, Hercules, Bush, Big Missouri, Daly, Indian and at Seven Mile. As a result "The Miner" is advised that additional capital will be forthcoming to place the Indian, Cascade Falls and Salmon-Bear river, all incorporated companies, on a sounder financial footing. The bonding of Dan Lindeborg's holdings at Seven Mile to Leckie, Kirkpatrick & Co., has now assured a large amount of development, and it is to be expected that the Silver Tip, also under bond, will receive considerable attention at the hand of the party who has taken the bond. By next fall it is confidentially expected that some of the groups mentioned will follow the lead of the Fish Creek Mining company as actual

producers of galena. Up Bear river the development undertaken at Glacier creek by the Portland Canal Tunnels, Ltd., in driving a 2000-foot bore to intersect at depth the vein series of that section of the camp will be followed with great interest by thousands of shareholders embraced in the several associated companies. Such high grade

the Glacier creek vein series at depth. had passed the 500-foot mark yesterday. This completes one-quarter of the proposed length of 2000 feet into the mountain.

Gibson Group—Harry Gibson and Pete Ronn who have been prosecuting development on this group, opposite the Bitter creek townsite, were in town on



View From Workings Surf Inlet Gold Mines, Princess Royal Island, B. C.

properties as the Columbia and Evening Sun will be supplied with some necessary pack trail construction so as to permit rawhiding out ore. The placer holdings on the Bear river and along Bitter creek will receive further attention and development. It has already been announced work will be resumed on the Red Cliff, the Northern Terminus and several other groups beyond the junction of the Bear river and American creek. On the Marmot river, too, three or four groups will resume substantial development.

PROGRESS AT PORTLAND CANAL

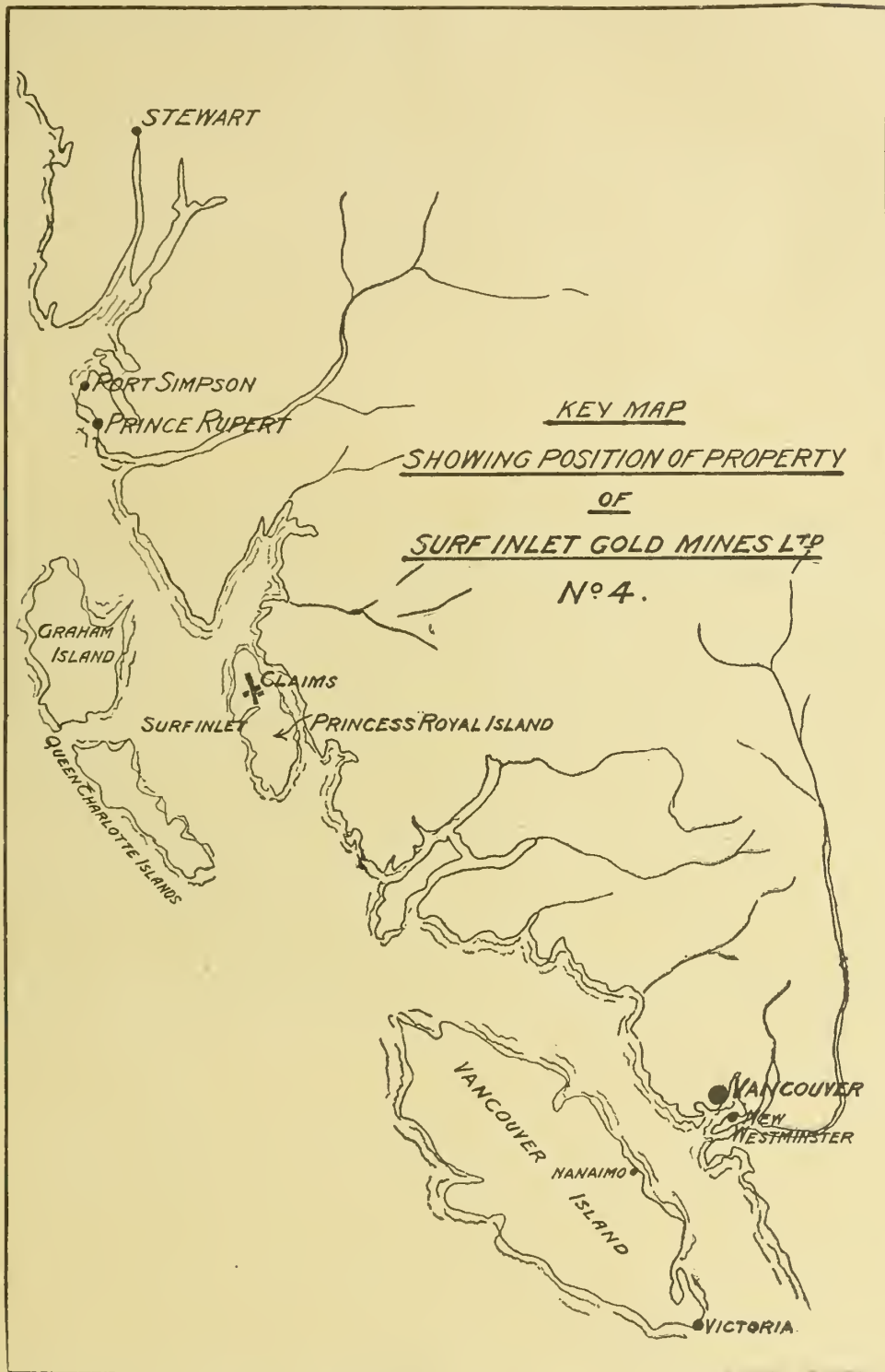
The "Portland Canal Miner" of the 22nd inst. says:—

Yesterday word was brought to town that the tunnel being driven by the Portland Canal Tunnels, Ltd., to tap

Thursday and sent down to Victoria a bunch of samples from the face of the 25-foot prospect tunnel. The adit is following the vein and there is a good face of ore. Recent samplings gave returns of over \$40 per ton in gold, silver, copper and lead.

Seven Mile—The latest reports from the property is that the tunnel is now in about 75 feet and good progress is being made by the contractors. Considerable galena is coming into the face and the paystreak has widened out to two feet. The ore being taken out is sorted and graded ready for shipment.

Red Reef—Work is being confined to the lower tunnel, pending the arrival of the owner, H. E. Newton, from Victoria. When the driving in the upper tunnel was suspended the working was in a full face of ore which looked quite promising.



ANNUAL MEETING OF UTICA MINES, LTD

The "Kaslo Kootenaiian" of the 6th inst. says:

The annual general meeting of the shareholders of the Utica Mines, Ltd., was held in the offices of the company here on Tuesday morning. The principal business was the reading of the manager's report, the financial statement, the election of officers and directors for the ensuing year. All of

the old officers and directors were re-elected and the manager's report and the statement of the finances of the company proved most encouraging to the stock holders.

Managing Director's Report on Utica Mine.

The managing director's report of the first year's operations at the Utica Mines, Ltd., must be a very satisfactory one to the shareholders of that company. It is as follows:

I have the pleasure of handing you herewith the financial statement and balance sheet for the financial year ending 31st December, 1912.

The past year, although the initial one of our history, has been a very successful one, and you will be glad to hear that we have developed several shoots of high grade ore, and acquired a fine water power, over which we have riparian rights, having purchased the land referred to in the financial statement

Drifting on the ore shoots mentioned above for 500 feet on the lower level, we stoped and shipped 670 tons of ore yielding in round figures the handsome sum of \$67,000.00 gross, but from January to July we were badly handicapped in shipping owing to the temporary suspension of the railway service.

From July to November we shipped 230 tons over the trail by rawhiding and packing to the railway. Our wagon road was completed by the end of October, thus giving us two months' use of the wagons and sleighs for transportation, and until the re-suspension of the railway, when we had shipped 390 tons.

The total shipments of the year were 670 tons of ore of the gross value of \$67,000.00, which after paying freight and treatment netted the company the sum of \$54,155.00 as shown on the financial statement.

Our underground development work consists of 500 feet of drifting, which shows the same continuous ore body and proves the ore shoot to be over one thousand feet long so far as it has been developed, and containing ore of the average value of 175 oz. silver and 15 per cent. lead.

The whole year's shipment of ore shows that it brought us an average of \$100 per ton gross, but owing to the zinc content, which at present we cannot sell, we have lost nearly \$5,000.00 in zinc penalties, in addition to the cost of treatment. This we hope may soon be remedied in the future.

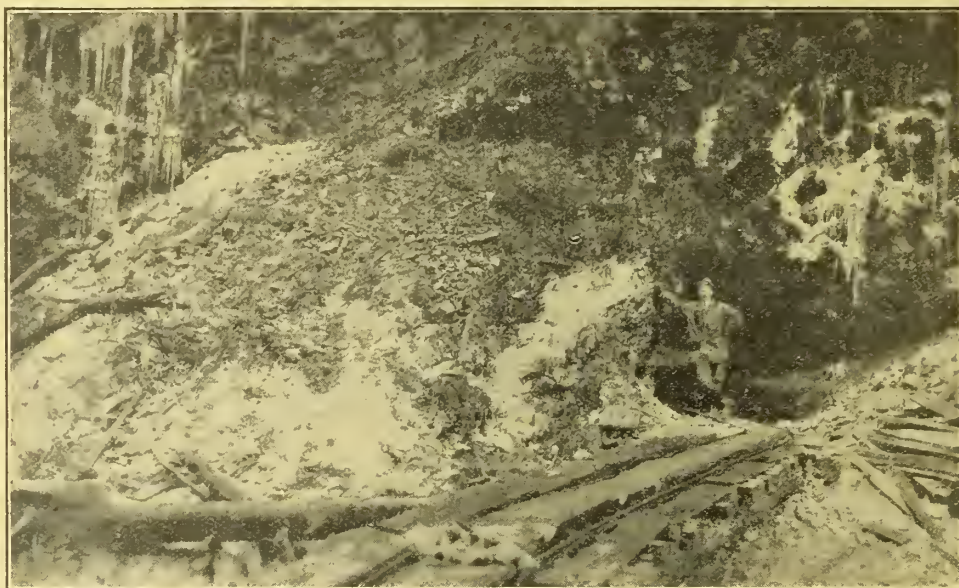
In addition to the work which the company has done, and is doing, we have leased some portion of our ground, which includes the apex of the mountain, to some miners, and we have granted them the right to work four men for a period of two years from the

slope, thus giving this mine the longest, as well as the highest grade ore shoots in the Slocan district.

With the addition of a compressor, tramway and concentrator, we expect to make a record for the company during the next two years. It is our desire to install those as soon as we are able and conditions warrant it.

I have had located for the company three mineral claims, which are valuable in consequence of the fact that they will give us 3,000 feet more of the ground containing the lead we have traced.

The water power service, as mentioned is of particular value to the company and could be estimated as a saving on a minimum rental of say \$50 per horse power per year. The completion of the wagon road enables us to ship continually all the year round, in larger quantities and at smaller cost. The saw-



Entrance of No. 1 Tunnel Showing Outcrop of Ore on Surf Inlet Gold Mines, Ltd.

The development work executed from May to November consisted largely of outside work, in conserving our water by erecting a "dam," putting in about 1400 feet of water pipe providing 300 fall, and producing some 150 to 200 horse power, according to precipitation.

We purchased and erected a sawmill to be run by our water power, and to be used in getting out timbers for the mine, and lumber for the buildings, etc., around the mine.

We built a telephone line from the mine down to the Kaslo main telephone line, and purchased the right to connect therewith, and the cost as shown has been well earned by it during the time it has been in use. We have also built a large two-storey house, with cellar, for cooking and storage purposes, and four small family buildings for the men and their wives, supplied them with water from our pipe line and constructed a side track or spur to connect our ore houses with the main line of the C. P. R. line from Kaslo to Nakusp.

1st day of July, 1912. They have erected a small tramway with a half inch rope (wire cable) 1900 feet long, built a camp and prepared for work. They have made an upraise of 100 feet and shipped 40 tons of ore yielding \$3,000 gross. They have encountered a shoot of ore six inches to one foot wide, in making this raise, which is very rich, running, I am informed, 315 oz. silver to the ton.

This is a parallel vein to the large surface showing from which above shipments were made, and lies 10 feet to the right on the footwall side of the vein. The ore shoot is from six inches to six feet wide and the lead or vein is stripped and exposed on the surface by open cuts, for several hundred feet up and over the mountain.

In the lower tunnel we still have 800 feet to run to get under this shoot, which, when we reach it, will give us some twelve hundred feet of stoping ground above us. The lessees have traced this ore shoot from three to four hundred feet up, and over the mountain

mill enables us to use all our own timber, at less cost than before.

The purchase of 642 acres of land adjoining the property, provides us with a mill site, water power site, saw mill site, room for buildings, and in addition some five million feet of timber for fuel, mine timbers and general purposes round the property.

The telephone has served us much money, and has been of the greatest convenience to both mine and office in saving time and money.

These assets are of appreciable value, but only the actual cost to the company appears in the balance sheet. When you consider that the government have also expended some \$25,000 on the wagon road, the value of the mineral claims referred to and the economic values of the water power, saw mill, etc., to the development and ore production of the mine, I think you could safely estimate an increased value of our holdings at \$75,000 over the assets shown in the balance sheet.

In conclusion I desire to express my thanks for the able assistance of the superintendent J. A. Poyntz, his foreman, and the men in the employ of the company, for their assistance, good work, and loyalty to the interest of the company, which has produced such good results this first year of our existence as a company.

All of which I respectfully submit for your consideration.

CHARLES F. CALDWELL,
Managing Director.

SUPPLIED BY CANADIAN INGERSOLL-RAND CO.

By far the greater number of the operating mines of the province having already been adequately equipped with power machinery and plant there was not much demand in 1912 from British Columbia mining camps for this class of manufactures. However, it is of interest to note that during the year

To Standard Silver-Lead Mining Co., Silverton—Ten BC21 stope drills; one BC26 and one type L plug drill; one 62 1-2 New Slugger.

To Van-Roi Mining Company, Silverton—Five BC21 stope drills.

To Kootenay Gold Mines Ltd., Nelson—Two BC21 stope drills.

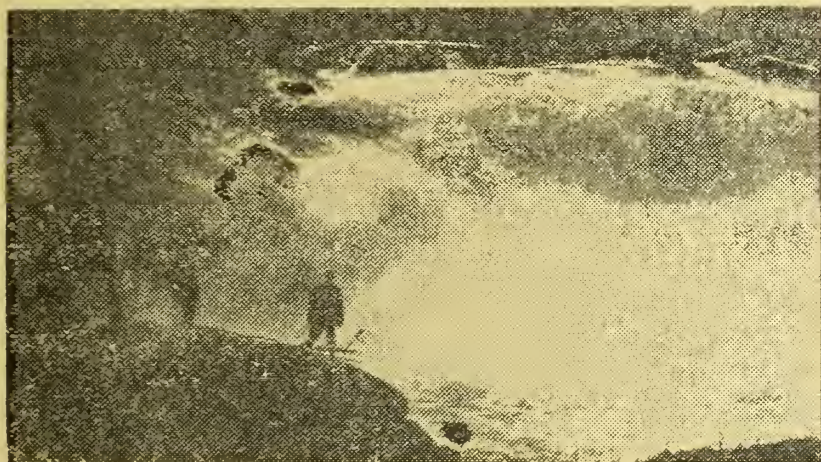
To Motherlode Sheep Creek Mining Company—One No. 42 and one No. 43 1-4B Little Giant rock drill; two BC26 sinkers; one No. 5 Cameron plunger sinking pump.

To Britannia M. and S. Company, Britannia Beach—Two BC21 stopers; one No. 53 all steel Little Giant rock drill; two No. 43 Little Giant rock drills.

To Le Roi No. 2 Ltd., Rossland—Two No. 54 all steel Little Giant rock drills.

To Western Fuel Company, Nanaimo—Two No. 43 and four No. 43 1-4B Little Giant rock drills.

To Lucky Jim Zinc Mines, Ltd., Slocan—One BC21 stoper; one No. 41 and one No. 43 1-4 Little Giant rock drills.



Surf Inlet Falls—Power For Surf Inlet Gold Mines, Ltd.

the Canadian Ingersoll-Rand Company, Ltd., supplied the following:

To Pacific Coast Coal Mines, Ltd., Vancouver Island—First half (high-pressure side) of a Class B-3, compound steam and compound air compressor; steam cylinders 18 and 32 in., air cylinders 28 and 18 in., stroke 24 in., displacement 2050 cubic ft. of free air per minute at normal speed of 120 r.p.m. No. 12 regular pattern piston pump, for general service; size 18 by 12 by 20 in., capacity 587 gal. per minute. Two No. 63 New Slugger drills; four No. 43 1-4B Little Giant rock drills; and one No. H-4 Improved type coal-puncher.

To Iron Mountain, Ltd., Salmo—One Class C, steam-driven compressor; steam cylinder 12 in., air cylinder 12 in., stroke 18 in. One 70 h.p. high-pressure r. t. boiler. Two No. 43 1-4B Little Giant rock drills; and two BC21 stope drills.

To Silverton Mines, Ltd., Slocan Lake—One 16 by 9 by 16-in. Class RP-2 compound power-driven compressor; displacement 744 cubic ft. of free air per minute at normal speed of 200 r.p.m. Two No. 43 1-4B Little Giant rock drills; six BC21 stope drills and other equipment.

To Red Cliff Mining Co., Portland Canal—Three No. 43 Little Giant rock drills

To Granby Consolidated Company (for Hidden Creek Mines)—Four BC21 stopers; three BCR43 sinkers.

Power machinery was supplied by other manufacturers to the respective operators of the Bluebell, Payne, Motherlode (Sheep Creek) and other metal mines in the province, and to the Canadian Collieries (Dunsmuir) Ltd., for coal mines on Vancouver island, but no particulars of these were obtained.

To Alberta coal mines the Canadian Ingersoll-Rand Co., Ltd., supplied last year the following compressors:

To International Coal and Coke Co., Coleman—One B-3-T 16 and 28 by 24 cross-compound high-pressure compressor for haulage system.

To Bankhead Mines, Ltd., Near Banff One 18 and 34 by 36 cross-compound Corliss high-pressure compressor, for haulage system.

To Canadian Coal Consolidated Co., Frank—One small straight-line compressor.

To Pembina Coal Co., Entwistle—One small straight-line compressor.

CANADA DEPARTMENT OF MINES MINES BRANCH

During 1912 three officials of the Mines Branch of the Canada Department of Mines, of which Dr. Eugene Haanel is director, visited British Columbia seeking information relating to the mining industry.

Mr. Joseph G. S. Hudson, of the Explosives division, visited the more important coal-mining properties on both the mainland and Vancouver island, with the object of obtaining information for use in a new edition of the general Report on the Mining and Metallurgical Industries of Canada.

Mr. Howells Frechette, chief of the Division of Non-metalliferous Deposits, extended to this province his investigation of the Canadian market for various mineral products in a crude or partially-prepared state. This investigation, which is being extended to all the provinces of Canada, has for its ultimate object the further encouragement of the use of Canadian minerals as material in Canadian manufactures. It also aims to point out to the producers the requirements of the domestic market, and to indicate the form in which the minerals should be prepared for use in the various industries in which they are to be used. The results of this work will thus set forth what minerals are at present in use in the manufacturing industries of Canada, their source, the uses to which they are put, the degree of purity required for the various processes in which they are to be used, and the physical condition in which they are purchased.

Dr. Alfred W. G. Wilson, head of the Division of Metalliferous Deposits, spent several weeks in British Columbia completing his investigation of the copper industry of this part of the Dominion; also in gathering data which will be incorporated in the new edition of the Report on the Mining and Metallurgical Industries of Canada.

Some information relative to the Dominion of Canada Assay Office, Vancouver, which is under the Mines Branch, was given in the January number of the "British Columbia Mining Exchange."

MINERAL PRODUCTION OF CANADA

The Mines Branch of the Canada Department of Mines has issued a "Preliminary Report on the Mineral Production of Canada during the Calendar Year, 1912," prepared by Mr. John McLeish, chief of the Division of Mineral Resources and Statistics. This shows the total estimated value of the mineral production for the year to have been \$133,127,489, as compared with \$102,220,994 in 1911. An increase of £29,906,495, or nearly 29 per cent. As, however, the production in 1911 was interfered with by long-extended labor disputes, a fairer comparison is that with the value of production in 1910, of \$106,823,623, which was the highest previous yearly total on record. As against the total for 1910, that for 1912 shows an increase of \$26,243,866, or more than 24 per cent.

Mr. McLeish observes: "The per capita production in 1910 was \$14.93; it increased in 1912 to more than \$18. This record is a gratifying indication or confirmation of the fact that the Canadian mineral industry in 1912 has had by far the most successful year in its history." He adds:

"This progress is all the more satisfactory because it is evidently due to a widespread and substantial development of the country's mineral resources. The only new camp of importance to contribute largely to the year's output was Porcupine, in Northern Ontario, the gold production of which was about \$1-750,000. A slight scarcity of labor was reported, particularly in connection with the asbestos and clay-working industries. There were comparatively few labor disputes to interfere with output, the principal difficulties having been a strike of coal-miners on Vancouver island, B.C., beginning in September, and a labor dispute at Porcupine toward the latter part of the year. The total coal and gold production was but slightly affected thereby.

"A substantial increase in price of most of the metals, which took place early in the year and continued throughout, had a very important bearing on the year's operations and contributed largely to the increased value of the output.

"A feature of particular interest during the year has been the continued and extended development of ore reserves. The satisfactory results from these operations particularly in the case of the nickel-copper ores of the Sudbury district, the Porcupine gold ores of Ontario and a number of copper and lead deposits of British Columbia, point to much greater annual outputs in the future.

"Extension of ore-smelting and refining facilities and in a number of cases special improvements in methods of practice have also been important factors in the year's operations."

The following condensed comparative table will give an idea of the value of the chief kinds of minerals included in the fuller tables printed in the report:

	1910	1912
Copper	\$ 7,094,094	\$ 12,709,311
Gold	10,205,835	12,559,443
Canadian pig iron	1,650,849	450,886
Lead	1,216,249	1,597,554
Nickel	11,181,310	13,452,463
Silver	17,580,455	19,425,656
Other metallic products	510,081	982,676
Total metallic...	49,438,873	61,177,989
Coal	30,909,779	36,349,299
Asbestos	2,573,603	2,979,384
Other non-metallic Cement, clay products, etc.	4,273,778	32,620,817
Total value production	\$106,823,623	\$133,127,489

The quantity of gold from British Columbia received at the United States Assay Office at Seattle, Washington, during eleven months of 1912, to December 1st, was 50 773 fine ounces. Allowing an estimate of 2500 oz. for December, this would make a total for the year of 53,273 oz. The quantity received from the Canadian Yukon was small—only 257 oz. In addition there was about 9000 fine ounces of silver.

TRANSACTIONS CANADIAN MINING INSTITUTE

"Transactions of the Canadian Mining Institute, "Vol. xv, 1912, has been issued to members of the Institute. It is well-bound book, containing 645 pages of text, illustrated, a two-page table of contents, a comprehensive general index covering 32 pages. Various matters in which British Columbia is particularly interested are given prominence. These comprise accounts of Institute meetings held in the province, and the following papers: "Notes on the Groundhog Coal Basin, Skeena District, B. C.," by Mr. G. S. Malloch; "Earthquakes, Strains and Stresses in Relation to Colliery Explosions," by Mr. F. Napier Denison; "Fuel Problems of the Pacific," by Mr. H. Foster Bain; "The Geology of the Nanaimo Coal District," by Mr. Chas. H. Clapp; "Operating Costs at a Small Free-Milling Gold Mine," by Mr. A. H. Gracey; "Costs and Cost Conditions at Bluebell Mine, B. C.," by Mr. S. S. Fowler; "A Note on Mining and Concentration Costs at Le Roi No. 2 Mines, Rossland, B. C.," by Mr. Ernest Levy; and "Early Mining on the Columbia River, B. C.," by Mr. Frank L. Nason. The inclusion of so much information relative to mining in, and the mining industry of British Columbia, makes the wide publicity thus given permanent and of correspondingly great value to the province

ANOTHER STANDARD DIVIDEND

The "Nelson Daily News" of the 13th inst., says:

With the addition of this month's dividend of \$50 000 from the Standard mine at Silverton the total distributed this year by three mining and mining and smelting companies of Kootenay and Boundary reached the total of \$413,675, made up; British Columbia Copper company, \$88,675; Standard mine, \$100,000; Granby, \$225,000.

Local shareholders in the Standard mine received their dividend checks yesterday.

Since commencing to pay out profits last April the Standard has distributed \$525,000 to its stockholders.

PROGRESS ON AUFEAS MINE

The "West Yale Review" of the 22nd inst. says:

Work in the tunnel on the property of the Aufeas Gold Mines, Ltd., has now been in progress for ten days and the tunnel is now in 35 feet from the old face. If this rate of progress can be maintained the time estimated for the completion of the tunnel will be reduced to less than three months.

The force at work numbers seven men. Besides driving the tunnel they have packed all their stores from the camp to the tunnel and have laid the tunnel track in to the face.

The new office building for the company is nearly completed and will probably be ready for occupation before the end of the week.

FIRST SHIPMENT OF HAZELTON TO TRAIL

A Hazelton despatch of the 6th inst. says:

The first shipment of ore from the Hazelton mining district reached the city last week on the Grand Trunk Pacific train and went south to the Trail smelter Saturday evening. This initial shipment came from the Harris Bros. mine at the interior centre and consists of an entire carload, and is the first step in what bids fair to be a flourishing business that will increase in volume with the next few years.

Angus Stewart, the well known railroad contractor and mining man, who is heavily interested in the Silver Standard mine, has just returned from Hazelton and is authority for the statement that that property is getting ready for a large shipment for the south.

Arrangements have not yet been completed with a smelter for treatment of the same. At the present time sacked ore is being hauled on sleighs with four-horse teams in five-ton loads. Excellent progress is being made with the work on account of the splendid weather conditions prevailing just now.

THE GRANBY BOND ISSUE.

The "Phoenix Pioneer" of the 1st inst. has the following:—

President Nichols of the Granby Consolidated company, has issued a statement relative to the proposed issue of convertible bonds, which says: The bonds will bear 6 per cent. interest and run for 15 years. A mortgage covering all mining and smelting properties in British Columbia will secure the issue.

Of the \$5,000,000 to be asked for, there will issue at once \$1,500,000 to be known as series. "A" for which stockholders may subscribe pro rata for cash at par plus accrued interest.

The bonds will be redeemable after ten years at 105 and interest. Provision will be made that 4 per cent. retire annually either by purchase at not more than 110 or by redemption by lot at that figure.

The bonds may be converted into stock at par within ten years. The \$3,500,000 bonds to be placed in the treasury may issue as directors deem advisable for either property or cash.

Final estimates are now in for the new 2000-ton smelter, power plant, etc., indicating that the cost of the Hidden creek property and development down to the date of commencing shipments will amount to \$2,944,554.

Of this, \$1,324,554 has been expended, leaving \$1,620,000 to be expended during 1913. Against this we have on hand in cash and copper net, over and above all liabilities, \$1,095,575.

Development at Hidden creek has increased our reserves by an amount which we believe is greater in tonnage and far greater in values than the total amount so far mined from all our properties. Operations at Grand Forks and Phoenix have yielded a profit for the last six months of \$766,054.

During the first week of January the Granby smelter treated 122,548 tons of ore of which all but 250 tons were from the Granby mines. It shipped 433,000 pounds of blister copper in the same period.

GEOLOGICAL CONGRESS

Within the last 20 or 25 years the science of geology has developed in a direction that has brought it into direct and serviceable association with those classes of commercial enterprise that are dependent on engineering. While this is especially true in respect of mining it applies almost equally to railroading, municipal engineering, and other activities of a like nature. The dependance of mining on geology is attested, for instance, by the fact that a geologist is now invariably included in the permanent staff of every mining company of importance; and the demand in recent years for the services of capable men to occupy such positions has been quite out of proportion to the supply. It is recognized universally, in short, that the debt of the mining industry to geology is enormous, and the obligation continues to increase steadily. This largely explains the circumstance that the invitation to the International Geological Congress to hold its next meeting in Canada was made, not only at the instance of the Canadian and Ontario government, and the Royal Society of Canada, but at that of the Canadian Mining Institute, an association representative, in a truly national sense, of the mining industry of the country.

It is believed that this meeting will immensely benefit mining in the Dominion. From the educational and the scientific standpoints much is to be expected from the interchange of views on Canadian conditions and problems, by men of international reputations. On purely commercial grounds, the interest and attention will be directed to the mineral resources and to the opportunities for the investment of capital in mining undertakings in Canada, in themselves fully justify the extensive preparations that are being made and the expense that is being incurred in anticipation of the event. Judging from the character of the attendance in the past, almost every civilized nation will be represented at the Canadian meeting by men of recognized eminence, including distinguished government officials, geologists and mining engineers in consulting practice, geographers, great educationalists and writers of text-books. Thus surely, never a better, a more effective opportunity has presented itself of providing for the wide-spread dissemination of authoritative information on Canadian resources and potentialities.

On these grounds, a general appeal for sympathetic co-operation is made to all classes and to the mining community in particular. The congress has held many meetings in other countries. In all, it has been welcomed with open arms. That record must be at least maintained.—H. Mortimer-Lamb.

PAYMENT MADE ON EUREKA MINE

The "Nelson News" of the 4th inst. says:

The British Columbia Copper company has made the second payment on its bond on the Eureka mine at Eagle creek.

Throughout this winter the big Boundary copper company has had about 20 men engaged upon the development of the property and has been successful in opening up a body of ore in the winze which is similar to that found on the surface at the Silver King mine. It is bornite and native silver.

Some difficulty has been experienced in getting in supplies on account of the heavy snow. The company has built a good camp with accommodation for 40 men at the mine, so that provision has been made for an increased force.

GOOD OUTLOOK FOR WHITE HORSE CAMP

The "White Horse (Y.T.) Star" of the 14th inst. says:

The fact that the ore ledge has been struck more than 200 feet deep in the Valerie property by the Atlas Mining Company means that at least two copper properties in this locality have been proven to be of such magnitude as insure the permanency of White Horse as a mining center for several years to come.

The operating of the Pueblo during the past ten months has practically been the salvation of the town and now that another, probably equally large property has been proven, there is no reason why the town should not be doubly as prosperous after active mining and shipping is inaugurated there, as it has been in the recent past.

Already business houses here which have been vacant for several years are being occupied with new industries and we predict that there will not be a vacant business room in the town by the middle of the coming summer. At least one concern has already ordered material for the construction of what will be the largest store room in town in anticipation of the increased business which is bound to follow the operating on a big scale of at least one more mining property, to say nothing of the working of probably half a dozen others in the local copper belt in the not distant future.

The fact that ten miles separate the Pueblo and Valerie properties is an indication that the intervening country is all mineralized and, such being the case, and with copper at a good price, there is no estimating the extent to which mining may be carried on in this locality in the future. Already one big company, the Atlas thanks to President Dickenson of the railroad company and W. D. Greenough, now general manager of the mining company, has options on several promising holdings, and other companies and capitalists are looking this way with the intention of securing developing and operating additional properties.

Not only will the prosperity which is now coming to White Horse, have a rejuvenating effect all over Southern Yukon, but it will extend to Skagway, where the only creditable new building which has been erected for years is that of the new Pack Train, but where there will be quite a stir in business circles as one result of coke being shipped through the place for the White Horse smelter and copper matts shipped, after being smelted here, to the copper refineries of the outside world.

Another thing which spells prosperity with a big P for White Horse is the conclusion arrived at by the White Pass company to enter the lower Yukon country with its own steamers which will operate between this place and Fairbanks, Alaska, one of the longest inland water runs on the American continent. The new steamers will be practically built here, here is where they will be outfitted and here will the crews home port.

On the whole, the outlook for White Horse was never so bright as at present and our business men who have held on with such admirable tenacity for years, while hoping against hope for better days, are to be congratulated that they are still in a position to enjoy the reward which is surely coming after so long a time.

About 27 tons of high grade ore are being brought down from the Utica per week, go-devils being used as a means of transportation to town, says the "Kaslo Kootenaiian" of the 6th inst.

"The British Columbia Old Country Public School Boys' Association"

All Old Boys of British Public Schools now in Vancouver Island, B. C., are requested to communicate the following information to the Secretary of the Association. (1) Name. (2) Present address. (3) Old school and date of residence there. (4) Present occupation.

A copy of the constitution and by-laws of the Association will be sent to every old public school boy who is not already a member thereof.

It is hoped that all may join, so that a complete register of old public school boys now in Vancouver Island may be obtained.

Old members who have not done so are requested to notify the Secretary of any change of address.

Address to the Secretary,

A. R. SHERWOOD

BOX 812, VICTORIA, B. C.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing over Lot 1340, Range 1, Coast District, by reason of the notice published in the British Columbia Gazette of the 27th of December, 1907, is cancelled, for the purpose of permitting the Davidson-Ward Company, Limited, to purchase the said lot.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B. C.,
19th December, 1912.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing by reason of the notice published in the British Columbia Gazette of December 27th, 1907, is cancelled in so far as the same relates to the following described lands, so as to permit of the sale of the timber standing thereon:—

"That portion of Lot No. 524, Group, 1, New Westminster District, not covered by Lot No. 1650 or the South Half of Lot No. 1651, Group 1, New Westminster District.

Commencing at the north-west corner of Lot No. 2635, New Westminster District; thence north 14 chains and 70 links; thence west 14 chains and 41 links, more or less, to the east boundary of Lot No. 781; thence south 3 chains and 50 links to the south-east corner of said lot; thence west 2 chains and 59 links to the fractional north-east corner of Lot No. 829; thence south along the easterly boundary of the said lot 26 chains and 50 links to a post marking an angle of the said lot; thence east along the boundary of the said lot 17 chains, more or less, to a fractional north-east angle of said lot; thence north along the west boundary of Lot No. 2635 a distance of 15 chains and 30 links, more or less, to the point of commencement; containing by admeasurement 50 acres, more or less.

Commencing at a post on the west shore of Adams Lake, Kamloops District, which post is situated 7 miles and 73 chains north and 42 chains east of the north-east corner of Section 30, Township 25, Range 11, west of the 6th meridian; thence west 16 chains; thence north 80 chains; thence east 32 chains, more or less, to the shore of Adams Lake; thence southerly along the shore of Adams Lake to point of commencement; containing by admeasurement 193 acres, more or less.

Commencing at a post planted on the east shore of Adams Lake, Kamloops District, which post is situated 5 miles and 44 chains north and 1 mile and 36 chains east of the north-east corner of Section 30, Township 25, Range 11, west of the 6th meridian; thence 20 chains east; thence 60 chains south; thence 10 chains west; thence 20 chains south; thence 20 chains west; thence 20 chains south; thence 44 chains west to the south shore of Adams Lake; thence northerly along the shore of Adams Lake to point of commencement; containing by admeasurement 283 acres, more or less.

Commencing at a post planted on the east shore of Adams Lake, Kamloops District, which post is 61 chains north and 83 chains west of the north-east corner of Section 30, Township 25, Range 11, west of the 6th meridian; thence 78 chains east; thence north to the south-west corner of Lot No. 1831; thence north along the west boundary of said lot and continuing north for a total distance of 198 chains in latitude from the point of commencement; thence west 6 chains to the shore of Adams Lake; thence southerly along the shore of Adams Lake to the point of commencement; containing by admeasurement 970 acres, more or less.

Commencing at the most northerly north-east corner of Lot No. 768, New Westminster District; thence east 40 chains; thence south 40 chains; thence east 40 chains; thence south 20 chains to an angle of said Lot No. 768; thence westerly and northerly along the boundaries of said lot to the point of commencement; containing by admeasurement 280 acres, more or less.

Commencing at the north-east corner of Lot No. 570, New Westminster District; thence south along the east boundary of said Lot No. 570 20 chains, more or less, to the north-west corner of T.L. Lot No. 32451; thence east 40 chains; thence north 20 chains; thence west 20 chains, more or less, to the south-east corner of Lot No. 569; thence west 20 chains, more or less, along the south boundary of Lot No. 569 to the point of commencement; containing by admeasurement 80 acres, more or less.

Commencing at the north-east corner of Lot No. 2849, Redonda Island, New Westminster District; thence east 13 chains; thence north 4 chains; thence east 19 chains; thence south 25 chains; thence west 32 chains, more or less, to the east boundary of Lot No. 2849; thence northerly along the east boundary of said lot to the point of commencement; containing by admeasurement 75 acres, more or less.

Consisting of an island in Goat River, lying immediately to the south of Lot No. 491, Group 1, Kootenay District; containing by admeasurement a total of 38 acres, more or less.

ROBERT A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B.C., December 11th, 1912.

In the Leadville camp, a few miles from Tulameen 35 mining claims have been located this winter.



TIMBER SALE No. X9.

SEALED TENDERS will be received by the Minister of Lands not later than noon on the 3rd day of March, 1913, for the purchase of Licence No. X9 to cut 45,300,000 feet of timber and 4,000 cedar poles standing on Lot 671, Malaspina Strait, New Westminster District.

Particulars of Chief Forester, Victoria, B. C.

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HIS HONOR the Lieutenant-Governor in Council has been pleased to appoint Messrs. H. C. Parson, of Golden; A. M. Harper, of the City of Vancouver; J. A. McKelvie, of the City of Vernon; R. A. Stoney, of the City of New Westminster; and John Jardine, of the City of Victoria, to be Commissioners under the "Public Inquiries Act" to enquire generally into labor conditions in the Province, and particularly the contracts and relations between employers and employees, the hours of labor, the conditions surrounding the employees during their employment, and the time and manner of payment of wages in mines, smelters, canneries, shops, factories, logging and railway construction camps, or in any other work and on tramways; the working and enforcement of the "Truck Act," the "Master and Servant Act," the "Deceived Workman Act," the "Woodman's Lien for Wages Act," and any other legislation affecting labour, the precautions taken for the protection of life, the preservation of the health and the prevention of unsanitary conditions.

The Commissioners will hold their first meeting at the Parliament Buildings on Saturday, the 28th day of December instant, at 10 o'clock in the forenoon, of which all persons interested are hereby to take notice and govern themselves accordingly.

Provincial Secretary's Office,
12th December, 1912.

FOR SALE

Three 125-ton copper smelting furnaces. Four Cornersville blowers, capacity, 752 cubic feet per revolution, direct connected to Erie engines. Three converter stands and fourteen shells. 84 x 126, for electric drive.

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One double-drum hoist, drums 8 ft. diameter, 6 ft. 3 in. wide, frame 24 feet x 11 ft. 6 ft. cylinders, 14 x 18, capacity, 2½ tons at 700 feet per minute. One 100 h. p. and one 75 h. p. boiler, both tested to 100 lbs. pressure. One Northey sinking pump, 8 in. x 4 in. x 12 in. One Worthington duplex pump, 20 x 10½ x 10. One 40 h. p. Jenckes Machine Company engine, 10 x 14.

Address

The Canadian Copper Company
Copper Cliff, Ontario.



LABOR COMMISSION

SITTINGS of the Provincial Labor Commission will be held as follows:—

Nanaimo—Monday, February 17th, at 8 p.m., Court House.

Cumberland — Wednesday, February 19th, at 8 p.m.

Alberni—Monday, February 24th, at 8 p.m.

Ladysmith—Tuesday, February 25th, at 3.30 p.m.

Steveston—Monday, March 3rd, at 2.30 p.m.

Chilliwack—Tuesday, March 4th, at 2.30 p.m.

New Westminster—Thursday, March 6th, at 11 a.m., City Hall.

Vancouver—Friday, March 7th, at 10 a.m., Court House.

The Commission is empowered to inquire into all matters affecting the conditions of labor in British Columbia. All persons interested are invited to attend and give evidence.

H. G. PARSON,
Chairman.

F. R. McNAMARA,
Secretary.

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About 800 men are working in a 40 mile radius of Lillooet.

An upraise of 480 feet is being run in the Star mine at Sandon. The raise is 7x11 feet in the clear.

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V. LLOYD-OWEN, SEC. TREA.

Placer gold is reported to have been discovered on Silver Creek, 100 miles southeast of Atlin. It is the most inaccessible diggings in British Columbia.

Along the Alberni Canal there are 450 men working on the Canadian Northern Railway grade.

INDEX

Subject	Page
Fourteenth General Meeting of Western Branch of Canadian Mining Institute Held at Nanaimo.....	5
"The Man at the Wheel"—Poem.....	14
Personal and General.....	15
Pyrites in British Columbia.....	19
Editorial	20
Latest Metal Markets.....	21
Turf Inlet Gold Mines.....	22
Promising Outlook for Portland Canal and Salmon River Camps.....	24
Annual Meeting Utica Mines.....	25
The Canadian Ingersoll-Rand Co.....	27
Canada Department of Mines.....	27
Mineral Production of Canada.....	27
Transactions Canadian Mining Institute	28
Another Standard Dividend.....	28
Granby Bond Issue.....	28
Progress on Dufas Mine.....	28
First Shipment Hazelton to Trail....	28
Geological Congress	29
Payment Made on Eureka Mine....	29
Good Outlook for White Horse Camp	29
Geological Survey of Canada.....	33
Good Diplomacy	35
Schorlemmer Drill Clutch.....	35
Centrifugal Pump for Molten Lead..	36
Dr. Wallace's Panacea.....	37

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Alameda00½	.01
Alhambra04½	.10
Ambergris05	.07½
Am. Comd'r00½	.01½
B. C. Copper	4.25	4.50
Black Horse .....	.01½	.02½
Bullion .....	.01	.02
Bullwhack .....	.48	.52
Caledonia .....	.23½	.26
Canadian Cons.	45.00	75.00
Carbonate Hill .....	.01½	.04
Copper King .....	.02½	.02½
Copper King (Che.) ..	...	.28
Federal, pref.	43.00	51.00
Federal, com.	16.00	23.00
Gertie .....	.05	.06½
Granby Smelter	68.00	70.00
Happy Day .....	.01	...
Hecla	2.20	...
H. E. M. ....	.07½	.09½
Hypoheek .....	.02½	.02½
Idaho Giant .....	.01½	...
Idora Hill .....	.02	.02½
International C. & C. ..	.37	.41
Jack Waite .....	.07½	.09
Laclede .....	.01	.03
Lucky Calumet .....	.01½	.02½
Lucky Jim .....	.13½	.17
Marsh .....	.22½	.26½
McGillivray C. & C. ....	.15	.18½
Missoula Copper .....	.02	.02½
Monitor .....	.01½	.02½
Moonlight .....	.04½	...
Nabob .....	.01½	.01½
Nugget Gold Mines .....	.25	.38
Oom Paul .....	.01	.03
Puritan .....	.13½	.19
Rambler-Cariboo .....	.85½	.90
Rambler Cariboo Ext. ....	.04	.05½
Silver Cable .....	.02½	.05½
Snowshoe .....	.01½	.02½
Snowstorm .....	.39	.45
Standard S. L.	1.35	1.47
Stanley .....	.03½	.04
Stewart	1.25	1.37
Tamarack Con.	1.25	...
United Copper .....	.60	1.00
Utica .....	.16	.19½

Industrials

	Bid.	Asked.
Wash. Water Power Co.	133.00	136.50
Western Union Life	135.00	145.00
Interstate Con. Tel.	20.00	...
Tamarack and Custer	1.01	1.26

Cobalt Stocks

	Asked.	Bid.
Bailey .....	.09½	.09½
Beaver Consolidated .....	.40½	.39½
Buffalo	2.30	2.10
Chambers-Ferland .....	.29	.28½
Great Northern .....	.09	.09½
City of Cobalt .....	.39	.38½
Confagas	9.25	9.10
Crown Reserve	3.65	2.58
Foster .....	.11	.09½
Gnfford .....	.06½	.06
Gould .....	.03½	.03½
Green Meehan .....	.01½	.01½
Hargrave .....	.08½	.08
Kerr Lake	3.20	3.00
La Rose	2.85	2.72
Little Nipissing .....	.01½	.01½
Mc Kin. Dar. Savage	1.98	1.97
Nipissing	9.15	9.00
Ophir .....	...	.04
Otlase .....	.02	.01½
Peterson Lake .....	.25½	.25½
Rochester .....	.04½	.04
Right of Way .....	.08½	.08
Silver Leaf .....	.04½	.04
Temiskaming .....	.34	.33½
Tretheway .....	.34	.32½
Wettlaufer .....	.15	.15

Porcupine

	Asked	Bid
Crown Charter .....	.00½	.00½
Dome Extension .....	.06½	.06
Foley O'Brien .....	...	.16
Hollinger	15.50	15.15
Juplter .....	.37	.36
North Dome .....	.60	...
Pearl Lake .....	.30	.29½
Porc. Imperial .....	.02½	.02
Preston East D.04	.03½
Rea Mines15
Swastika10	.09½
Vipond20	.19½

Sundry

C. G. F. S.05	.04½
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VANCOUVER STOCK EXCHANGE.

Listed Stocks.

	Bid.	Asked.
Alberta Canadian Oil02
Alberta Coal & Coke ..	...	.02
International C. & C. ..	.37½	.40
Portland Canal .....	...	.03
Western Coal & Coke ..	1.50	...
Dominion Trust Co.	120.00	126.00
Great West Perm. (A) ..	123.00	127.00
Nugget Gold Mines .....	.35	.40
Van-Nan. Coal .....	...	1.50
Vancouver Dev. Co.	11.00	...

Unlisted Stocks.

Red Cliff Mining .....	...	.06
Amal. Dev. ....	.00½	.00½
American Canadian Oil ..	.02½	.05
Canadian Pacific Oil ..	.05	.07
B. C. Copper	4.25	4.50
Granby	68.00	69.75
Kootenay Gold .....	.11	.19½
Rambler Cariboo .....	.81	.95
Lucky Jim Zinc .....	.11½	.16
Royal Collieries .....	...	.02½
Standard Lead	1.30	...
B. C. Refining Co. ....	.40	.55
Stewart Land .....	...	12.00
B. C. Perm. Loan A. xd. ..	130.00	...
B. C. Trust Co. ....	...	160.00
National Finance xd. ....	...	135.00
Northern Crown Bank	97.00	...
B. C. Telephone, com.	108.00	...
Pacific Loan Co.	26.00	...
Prudential In. Co. xd.	108.00	...
S. A. Scrip	500.00	...

USES OF COPPER IN 1913

Considerable attention has been directed of late to the increased use of copper, resulting from the manufacture of automobiles. It is estimated that 40,000,000 pounds of copper will go into the making of automobiles in 1913, and it is anticipated that in the next five years this amount will be increased 20 per cent as the demands for automobiles increases.

Increased production to meet the consumption is not materializing as fast as anticipated. The porphyries are really only filling up the void caused by the

old mines, such as Calumet & Hecla, Quincy and Wolverine, showing reduced outputs. Twenty-seven of the largest producers, representing over 90 per cent. of the total output of the United States Canada and Mexico, produced approximately 1,128,417,559 pounds of copper in 1912, an increase of 14 per cent. over the previous year. The porphyries increased their outputs by 6,3390,000 pounds, of which China contributed 27,740,880 pounds of the increase, which was 4,000,000 pounds less than estimated a year ago.—"Wall Street Journal."

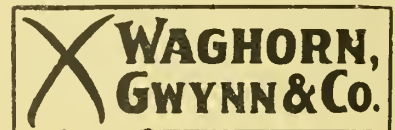
The Ajax mine at Trout Lake is working a force of 12 men on the ten foot lead that has been uncovered lately and several carloads already have been shipped.

See Special Inducement to New Subscribers on page 39 of this issue

MINING STOCKS

Bought and Sold on Commission.

Quotations on all Active Stocks.



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GEOLOGICAL SURVEY OF CANADA.

The following notes will serve to show the field-work of the Geological Survey of Canada in British Columbia and Yukon during the summer of 1912.

The officers who were in charge of geological parties in 1912 were: Messrs. J. A. Allan, A. M. Bateman, N. L. Bowen, D. D. Cairnes, C. Cameli, C. H. Clapp, R. A. Daly, C. W. Drysdale, G. S. Malloch, R. G. McConnell, H. Ries, S. J. Schofield and C. D. Walcott. Officers in charge of topographical parties were: Messrs. K. G. Chipman, W. E. Lawson, S. C. McLean and D. A. Nichols.

Geological Work.

A considerable portion of the time of the greater number of the officers was devoted to the preparation of information relating to the British Columbia excursions of the International Geological Congress, to take place in the latter part of August, 1913.

During the summer of 1912 the field-work was completed in connection with making a trans-Cordilleran geological section along the main line of the Canadian Pacific railway. This important work was commenced in 1911, and has been carried out under the general supervision of Dr. R. A. Daly. It is the third nearly or quite complete section of the Cordillera thus far made. The first, along the 40th parallel of latitude, from the Great Plains in Colorado to the summit of the Sierra Nevada in California, was run about 40 years ago by a United States Government party under Mr. Clarence King. The second, along the 49th parallel, from the Great Plains to the Pacific, was made under the direction of the Canadian commissioner of the International Boundary Commission (1901-7), by whose courtesy the report will soon be issued in reprint form as Memoir No. 38 of the Geological Survey.

In order to hasten the completion of the study of the section along the line of the Canadian Pacific railway, a number of field parties were engaged on this work

during 1912. Mr. J. A. Allan in continuation of his work of previous years, completed the section from Banff to Golden. Dr. R. A. Daly studied the geology along the railway route of the Selkirk mountains and of the Purcell mountain system. This was in continuation of the work performed in 1911, and among other results obtained, the structure of the Purcell mountains, hitherto unknown in the part north of Windermere, was worked out. Mr. C. W. Drysdale was engaged in the study of that portion of the section between Six-Mile point, on Kamloops lake, and Lytton, while Mr. B. Rose made a special examination of an area about the west end of Kamloops lake. Mr. Charles Cameli and Mr. N. L. Bowen studied the section along the railway line from Lytton to Vancouver.

The study of another geological section of prime importance, namely, that along the Yukon-Alaska International boundary from the crossing of Yukon river northward to the Arctic, was also completed in 1912. This work was done in co-operation

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with the United States Geological Survey, which undertook to map the geology between Porcupine river and the Arctic ocean, while the remaining portion from Porcupine river southward to Yukon river was undertaken by the Canadian Geological Survey. Mr. D. D. Cairnes completed, in 1912, the geological mapping of this southern part.

Mr. R. G. McConnell made a special examination of the geological section through the Coast range from Prince Rupert to Aldermere. He also spent a short time examining some of the gold-bearing quartz deposits that are being developed on Princess Royal island and was for a longer period of time on Texada island in connection with the recent mining developments taking place there.

Mr. C. H. Clapp engaged in field-work on Vancouver island, geologically surveying the area represented by the Sooke and Duncan map-sheets. Certain bodies of gabbro in this general district contain copper sulphide deposits of prospective importance. The recent study of the field has led to the important discovery that there are a greater number of these gabbro bodies than hitherto supposed. Mr. Clapp also spent some time on Graham island gathering information concerning the recent developments of the coal measures of that island. It was found that the coal, while of excellent quality, occurs in much smaller basins than was previously thought.

Mr. G. S. Malloch continued his examination of the Groundhog coal basin. The dimensions of the field are, roughly, 30 by 45 miles, but the coal-bearing horizon has been removed by erosion from a large part of this area.

Mr. Charles Camsell, beside engaging in the study of the Cordilleras along the main line of the Canadian Pacific railway, also studied a general section from Midway to Spence's Bridge. An examination was made of the gold-copper deposits of Kruger mountain at the southern end of Okanagan valley, and of the gold-copper deposits on Independence mountain in the range between Keremeos and Twenty-Mile creeks, Similkameen district. Mr. Camsell made a brief study of the copper deposits at Copper mountain, Similkameen district, where for the last year the British Columbia Copper Company has been carrying out important development work. The result of this work has been to prove the existence of large deposits of low-grade copper ore, which, if it can be successfully treated, will mean that a new and important copper-producing field will soon be open. A brief study was also made of the Tertiary coal-bearing rocks of White lake in Okanagan valley.

Mr. A. M. Bateman made a preliminary examination of the economic resources of Bridge River district. In this district, mining work is being done in the Cadwallader Creek section, where the gold-bearing veins, though small, are persistent and their gold content is sufficiently high to justify mining the ore on a commercial basis. Mr. Bateman also made an exploratory trip from Lillooet to Chilko lake. As a result of this trip, the eastern border of the Coast Range batholith, which is in many places an important mining zone, was outlined and the bordering strata were found to be of lower Cretaceous age instead of Palaeozoic, as previously supposed.

Dr. H. Ries, while continuing his study of the clay and shale deposits of British Columbia, made examinations along Columbia River valley from Golden southward and from Revelstoke northward. Deposits of clay or shale, which can be utilized for common and pressed brick, and perhaps for other classes of products, were found in both districts. A study was also made of the shales of the Nainimo series on the east coast of Vancouver island.

Mr. S. J. Schofield made an examination of the part of East Kootenay lying south of the Crow's Nest branch of the Canadian Pacific railway and between Kootenay river and Kootenay lake. The mineral-bearing belt, containing the St. Eugene, Aurora, and Society Girl ore deposits, was outlined southward to the International boundary.

Mr. O. E. LeRoy was engaged principally in making necessary preparation for the excursions of the International Geological Congress.

Dr. C. D. Walcott was engaged in to No. 2 creek and the country to the west studying the Cambrian sections of Yellowhead pass.

Topographical Work.

The field work performed during 1912, by the topographical division of the Geological Survey, was as follows:

Mr. K. L. Chipman commenced topographical work in the Windermere district. When completed, the map will include Columbia valley from Dutch creek for a distance of about 25 miles.

Mr. W. E. Lawson engaged in work in Lillooet district. The topographical map will include a greater part of Bridge

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River district and the headwaters of Eldorado creek.

Mr. D. A. Nichols prepared a detailed topographical map of the Iron ranges on Texada Island, and also a map of a portion of the northern end of the island.

The various topographical maps, when completed, will indicate all cultural features such as roads, railways and buildings; in black; all lakes, streams, etc., in blue; while relief will be shown by contour lines in brown. The maps will be available for a variety of purposes and should prove very useful.

GOOD DIPLOMACY

The authentic history of the arrest of the Indians Paul and Spitulum, accused of murder, reflects great credit on the officers of the Department of Justice, and not a little on the group of Indian chiefs concerned in the affair, says the Vancouver "News - Advertiser." Attorney-General Bowser took the audience at the Ward V banquet into his confidence last evening and gave the inside facts not heretofore published. While the department ordered a pursuit

of the Indians last summer and offered large rewards for their capture, it was recognized that the capture would be difficult during the season that they would be able to find shelter and subsistence among the mountains. It was expected that they might be found in the winter, though even then the arrest might be attended with the loss of several lives. For obvious reasons the authorities preferred to place upon the chiefs the responsibility of bringing in the outlaws, if the chiefs would accept it. This would place the native organization, such as it is, on the side of law and order, and make them supporters of authority rather than protectors of criminals. Conferences were held with the chiefs to this end, and finally the chief constable arranged with certain chiefs that Paul and Spitulum should be brought in and delivered over to justice. The chiefs who took this responsibility did not ask nor accept the cash reward that was offered by the Government. The recognition which they preferred and will receive is a gold medal for each of them, with an inscription testifying to their services in support of the Crown and in the maintenance of law and order within their sphere of influence. They undertook not only to support the authorities in the enforcement of the law, but agreed on behalf of their bands that there should be no more cause of trouble. So long as this compact is observed it enlists on the side of the Department of Justice the most influential members of the bands which have made most trouble in the past. The event shows that the chiefs have a certain worthy dignity and pride that may be made effective for good. The fact that they have carried out their part of the undertaking in the matter of the two fugitives is a proof that they have real power and influence. It will be admitted that the officers who carried through this arrangement have acted with sagacity and foresight.

SCHORLEMMER DRILL CHUCK.

Mining and Scientific Press, San Francisco, recently printed the following:

A new chuck to hold drill steel in the reciprocating type of rock-drilling machines, has been invented by a Canadian, H. W. Schorlemmer of Rossland, B. C., and is now about to be made available to the users of rock-drilling machines in the United States. This chuck can be fitted on any of the reciprocating type of rock-drilling machines by turning down the end of the piston rod, so as to make a shank about 7 in. long and 2 1/4 to 2 7/8 in. diameter, according to the size of the machine. This shank must be slotted, longitudinally, like the slot in a bushing, to take a key which holds the drill. The same standard bushings are used with this as with the U-bolt chuck.

The collar is adapted to slide freely on the turned end of the piston rod, and has an extension on one side which holds the ledging key; this key also slides freely in the collar. The drill shank, being inserted in the socketing or

bushing, the drill-key loosely engaging it, the collar and wedging-key, as the drill bit strikes the ground in the first blow, will be carried forward by their own momentum and the inclined surfaces of the two keys will cause the inner or drill-key to move inwardly with considerable force, thereby crowding the drill shank against the opposite wall of the bushing and gripping it with great firmness. Subsequent blows of the drill bit serve only to make the engagement still tighter. The construction and arrangement of the collar so as to slide forward with the wedging-key, in the tightening operation, is an

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important feature, as the momentum of the heavy collar, added to that of the wedging-key, is sufficient to insure the drill-key being driven against the drill-shank with such force as to prevent any possible loosening of the drill in the operation of the machine and to prevent the drill from being pulled out of the bushing in case it should stick in the hole.

To release a drill from this chuck, the forward end of the wedge-key is struck with a hammer, driving the key backward and thereby loosening the drill-key, which allows the drill-shank to be removed from the bushing with ease. Owing to the arrangement of the keys this operation is very simple, requiring not more than one or two blows with the hammer to release it.

The collar and keys are easily removed from the piston-rod, when the drill shank is not in the bushing, by allowing the drill-key to drop down in its slot as far as permitted by the shoulders on it; then hold the wedge-key up against the top of the collar. With the parts in this position the collar and the wedge-key can be slid backward past the drill-key, the lower gib on the wedge-key can be lifted out of its slot and the collar and wedge-key drawn forward over the end of the piston-rod. It is practically impossible for the operation of taking the chuck apart to be done accidentally, as the large key will always follow the movements of the small key, thus preventing any displacement of the collar or keys.

The chuck has been tested in the mines at Rossland for three years, and has proved practical, it is also claimed to be more economical of operation than the U-bolt chuck, beside cutting down the cost of drilling, owing to the time saved in changing drills. The Consolidated Mining and Smelting Company of Canada, Ltd., is using it exclusively on all drilling machines. The Le Roi, Le Roi No. 2's Josie, and other mines in

Rossland district have been using it with success for the past year and a half.

CENTRIFUGAL PUMP FOR MOLTEN LEAD

Writing on January 23 to The Engineering and Mining Journal, New York, Mr. John F. Miller, superintendent of the Consolidated Mining and Smelting Co.'s lead-refinery at Trail, said:

"In the Journal of January 11, p. 98, the following statement is made by Professor Hofman:

"Another improvement, first used probably at Grasselli, Ind., is the removal of the lead from a kettle by a horizontal (this should be verticle, I think) centrifugal pump driven by an electric motor. This works beautifully; one important advantage of the Steitz siphon, invented in 1877, is the depth of a lead kettle is no longer limited to 40 in., so that a kettle can easily be made to hold 60 tons of refined lead."

"You will note that Professor Hofman says 'probably at Graselli, Ind.,' and I thought that perhaps it might be interesting to know where the centrifugal pump was first used for handling lead.

"We formerly used the Roelsing lead-pump, and here let me say, I cribbed it straight from Professor Hofman's most excellent work, 'The Metallurgy of Lead.' The Roelsing pump makes a large amount of dross, the smeltery was charging us a high rate for treating it, and then, too, the upkeep was high on the Roelsing pump. I had been for some time puzzling how to beat this combination when the thought struck me one day after reading an advertisement in the 'Journal,' how would a centrifugal pump work pumping lead? This was in August, 1905. I at once wrote to

all the manufacturers of centrifugal pumps whose addresses I could find, asking them if they had ever used or heard of using a centrifugal pump in handling molten lead, and if so, would they give me some data on this use. They all replied that they knew nothing of a centrifugal pump being used for this work, and just one, a San Francisco firm, offered to make some experiments at our expense. We had everything at hand except the centrifugal pump, and I borrowed one from a nearby concentrator. This pump we rigged up in a plot of lead to run the same speed as for pumping water; it was a sight I will never forget, when the switch was thrown in that pump threw a 2-in. stream of lead clear over the pot and made a great scattering of the 'Romans.' We have ever since been using the centrifugal pump at a reduced speed, and it gives great satisfaction. It has since been adopted at a number of plants, among them the Grasselli refinery, mentioned above.

"While writing of this I will mention another use to this which I have put a centrifugal pump. Four years ago I installed an all-iron vertical centrifugal to handle concentrated sulphuric acid from a storage tank to kettle tanks, a lift of about 25 ft. The same pump is still in use and gives perfect satisfaction. Have had no repairs or renewals except a new runner last winter, the old runner having been broken by using a chain wrench on the pulley when the acid was frozen in the pump.

"While I feel sure I originated the idea of the use of the centrifugal pump for handling lead and bullion I wish the greatest number to have the benefit of the idea, for I realize that I have cribbed a great deal, particularly from your own valuable publications."

WHY HE SHOOK HANDS.

When Hon. R. L. Borden was receiving a deputation of suffragettes in Toronto recently a couple of newspaper women accompanied the franchise seekers as a matter of business. When the fair ladies had been formally introduced, Mr. Borden noticed a couple of young women who seemed to be very modestly keeping in the background. Stepping over to them he extended his hand. "Oh," said one of them, rather flustered, "we are not suffragettes; we are only newspaper women." "That is why I am shaking hands with you," replied the Premier with a dry smile.

"APPROACH AND GLEAN."

Just before leaving America, Miss Violet Asquith consented to see some reporters from New York newspapers. She told them that in Great Britain the pressmen were allowed to approach and glean what information they could, but not allowed to ask questions on matters proposed by themselves. The New York papers are still fighting for breath over the "approach and glean" part of it. Imagine a Hearst representative "gleaning."—"Amherst Daily News."

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DR. WALLACE'S PANACEA

Dr. Alfred Russell Wallace, the grand old man of science of Great Britain, on the eve of his 90th birthday, submitted to an interview in which he gave as a panacea for all existing evils and of extreme riches on one hand and starving poverty at the other, observes the "Rossland Miner" of the 5th inst. This is to pass an act that the unborn shall have no rights, and he says many vexatious problems would be solved. All fortunes to go to the state. The state, being the inheritor, would make ample provisions for the "heir" and the vast flow of accumulated wealth that would be then unloosed would serve to endow the nation with a sufficiency for all, from universal education downward.

The most vital thing of all, he said, is to get rid of the horrible, grinding poverty, which is stalking the country like a grisly specter. It is not astonishing that the richer a country is at one end the poorer it is at the other. We had last year an enormous trade boom; we are the richest country in the world, and yet the bones of starvation are rattling and clanking amongst us. We do nothing, and all we say, with a shrug of the shoulders is "let them starve."

Dr. Wallace takes a pessimistic view of man's advance and says that in intellect and morals we have not advanced from the days of the earliest Egyptians and Syrians, a period of about 7000 years, down to the present day.

Dr. Wallace frankly admits that he is a Socialist, and if his panacea has

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no other merit it has that of originality.

Mr. Wallace's panacea reminds one of the claims put up by owners of patent medicine, as with one remedy it is claimed coughs, colds, rheumatism, fever, indigestion, and many other ills can be cured, which is impossible. So philosopher and reformer and Socialist each has his own remedy which he claims will cure all of the evils of the nations of the world. Hary George says single tax is the only remedy. Karl Marx thought that al capital should be held in common for the good of all. Wallace says that the state should own everything by inheritance, and so, even the greatest of reformers differ in their views. The result reached in the end by the three reformers would be the same. Single tax would, in time, lead to the state owning all of the land, as it would cause a slow but sure confiscation of it to the state, because when all of the taxes are thrown on one class of property it will not pay individuals to own that sort of property. Wallace would have the state own everything, as, if his plan were put in operation, by the time the present living were all dead the state would own everything, as the only heir for everything would be the state. Karl Marx thought all capital should be owned by the state, and this, of course, would include all property. Each of the three have a different road leading to the same result—ownership by the state.

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As faulty, (however, as the present system is, none of the reformers have pointed out anything that will give better results than those at present in vogue, as human institutions can never be perfect as they partake of the frailties of the men who administer them. It is the wisest policy to leave present conditions alone. While they are far from perfect, they are as good as have yet been devised and put into effect by man, or as ever will be put into effect, owing to man's limitations and imperfections.

A MISSION THAT FAILED

Canadian women, in the West as well as in the East, have been unmoved by recent appeals from one of the British suffragette leaders who attempted to reconcile them to the methods of militant suffragism and to stir them up to imitate those methods. The failure of Miss Wylie's mission speaks volumes for the self-respect, the prudence and the saving common-sense of Canadian women.—"Hamilton Herald."

MOST UNWOMANLY

Of all the unwomanly things the militant suffragettes have so far done the destruction of rare and beautiful flowers seems the most unwomanly.—"Ottawa Free Press."

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AND ENGINEERING NEWS

VOL. XV.

VANCOUVER, B.C., MARCH, 1913.

No. 3

Twelfth International Geological Congress

Some Particulars of the Forthcoming Twelfth International Geological Congress—Of Great Importance to Canada—A Varied Itinerary Prepared—List of Committees and Officials—Programme of the Different Meetings.



Members of the Organizing Committee of the Twelfth International Geological Congress, who attended a committee meeting held at Ottawa on March 4. Included in the group are several invited visitors. Dr. Frank D. Adams, this year's president of the Congress, is in the centre of those in front, with Mr. G. G. S. Lindsey immediately on his left. Against the column stand Dr. J. B. Porter and Mr. Jas. White, with Mr. W. Stanley Lecky between them and the president. Behind Mr. Lindsey stand Messrs. D. B. Dowling, John McLeish, Howard W. DuBois, Dr. Willet G. Miller, and Mr. W. F. Robertson. On Mr. Robertson's left are Messrs. A. A. Cole (formerly of Rossland) and R. W. Brock, while immediately in front of him is Professor Sexton, Halifax. On the extreme left, in the fur coat, is Mr. James McEvoy, with Mr. Chas. Cammell on his right and Mr. M. E. Purcell immediately behind him. Among those to the right of the president are Messrs. W. F. Ferrier, J. B. Tyrrell, R. G. McConnell, Dr. Coleman, Dr. Goodwin, and other well-known men.

The Twelfth International Geological Congress, to be held in Toronto, Ontario, next August, will be of much importance to Canada, since it will bring prominently to the notice of a large number of scientific men from other countries the great extent of the Do-

minion and some of its enormous and varied natural resources. The session now being prepared for will be the first to be held in Canada and the third on the western side of the Atlantic Ocean, earlier sessions in America having been the fifth, held in the United

States in 1891, and the tenth in Mexico in 1906. The largest enrolment of members and attendance were at the seventh session, held in Russia in 1897, when there were 1037 members enrolled and 704 in attendance, the latter number including 139 delegates and 40 vice-

presidents representing 27 countries. At the eleventh session, though, there was a greater representation; that session was held in Sweden in 1910, and the records give the following figures: Members enrolled, 879; members attending, 625; delegates, 262; vice-presidents, 74; countries represented, 36. It is confidently expected that the corresponding figures for the twelfth session will be even larger than those that made the very satisfactory showing for the session in Sweden.

In passing, it may be mentioned that members are usually professional geologists or persons occupied in an allied profession, though amateurs are welcome members, for much important geological work has been accomplished by amateurs whose love for the science has been their only inducement to work. At each Congress more members are enrolled than actually attend, but those who do not attend derive benefit from the Transactions which are sent to all members and which contain the more important papers and discussions. Delegates are members of the Congress who have been specially appointed to represent a government, university, or society. Vice-presidents are members of the Congress, usually delegates, elected at the first meeting of each session to represent their country on the Council of the Congress.

Value of the Congress.

The following is an excerpt from the preface to the second circular, recently issued by the secretary of the Congress:

"From even a brief recital of the object and work of the Congress, its importance is evident, but a few other points may be touched upon. It has secured the co-operation of the governments of various countries as well as men of science that has resulted in the magnificent geological map of Europe now approaching completion. A similar geological map of the whole world will be undertaken. As an example of valuable international studies may be mentioned the very careful investigation into the iron ore resources of the world, the results of which are embodied in a series of valuable volumes, in which the extent, quality, and mode of occurrence of the iron ore resources of every country of the world are set forth, and illustrated by means of maps and plans. A similar plan of study is now in progress to determine the coal resources of the world, a full report of which will be issued in 1913 before the meeting of the Congress in Canada. The Congress serves, in a sense, as an international clearing house for geology. These great gatherings of distinguished scholars of all nationalities have aroused greater interest in geology on the part of private individuals, corporations, and governments, and given it a higher standing as a science, and rendered possible its increased economic application.

"The country entertaining the Congress is repaid in many ways. The excursions are participated in by the more eminent geologists and mining engineers of the world, giving them a knowledge of its resources and possibilities, which they spread abroad, for they are the advisers of capital; the writers of text books and authoritative articles; and the instructors in univer-

sities and schools. Their criticisms and suggestions based upon their experience with similar problems and conditions in other parts of the world are helpful and stimulating to the home geologists and mining engineers. After leaving any country, they have learned where to obtain reliable information concerning it and they follow its developments and discoveries as announced in the press and technical papers."

Object and Work

From the same circular it is learned that the object of the International Geological Congress is, briefly, the advancement of knowledge concerning the earth, both in the field of pure geological science and in its application to the arts and industries, through the association and co-operation of leading geologists and engineers of all nations. The more important methods by which it endeavors to accomplish its aim are as follows: 1, meetings; 2, publications; 3, international committees; 4, excursions; 5, prizes. Information concerning each of these methods is given in the circular.

Meetings of Congress

Regarding meetings the following is quoted: "The meetings are held every three years in different countries, and each session lasts from seven to ten days. The meetings are attended by members from every civilized country. The leading countries, societies, and universities are represented by specially appointed delegates. Papers bearing on questions of general interest are read and discussed. As main topics for discussion subjects of scientific or economic importance are selected in advance so that every member who can contribute knowledge on the subject may be prepared to do so. In this way the exact state of present knowledge on these topics is put forth and made known."

Incidentally, it may here be mentioned that the meetings of the Twelfth Congress will be begun at Toronto on Thursday, August 7, instead of August 21, as previously announced, and will be terminated on Thursday, August 14.

Patrons and Committee

Patrons—Field Marshall, His Royal Highness the Duke of Connaught, Governor-General of Canada, has graciously consented to be the honorary president of the Session. There are seven honorary vice-presidents, these including the Right Hon. the Prime Minister of the Dominion of Canada, and the Hon. the Premier of British Columbia.

Executive Committee—This committee consists of Frank D. Adams, D.Sc., F.R.S., McGill University, Montreal (president); R. W. Brock, M.A., F.R.S.C., Director of the Geological Survey of Canada, Ottawa (general secretary); Alfred E. Barlow, D.Sc., McGill University; A. P. Coleman, Ph.D., F.R.S., University of Toronto, Toronto; Theo. C. Denis, B.A.Sc., Superintendent of Mines for the Province of Quebec, Quebec; O. E. LeRoy, B.A., M.Sc., Geological Survey, Ottawa; G. G. S. Lindsey, B.A., K.C., Toronto; Wm. McInnes, B.A., F.R.S.C., Geological Survey, Ottawa; Willet G. Miller, LL.D., F.R.S.C., Geolo-

gist for the Province of Ontario, Toronto; W. A. Parks, B.A., Ph.D., University of Toronto, Toronto; J. B. Tyrrell, M.A., F.R.S.C., Toronto, and W. Stanley Lecky, A.R.S.M., Ottawa, secretary.

Organization Committee—Beside the members of the Executive Committee, this committee includes the following: J. A. Allan, M.Sc., Ph.D., University of Alberta; Henry M. Ami, M.A., D.Sc., Ottawa; M. B. Baker, B.A., B.Sc., School of Mining, Kingston, Ontario; J. A. Bancroft, M.A., Ph.D., McGill University; A. G. Burrows, M.A., B.Sc., Ontario Bureau of Mines, Toronto; D. D. Cairnes, B.Sc., Ph.D., Geological Survey, Ottawa; Chas. Camsell, B.Sc., Geological Survey, Ottawa; Arthur A. Cole, B.Sc., M.A., Cobalt, Ontario; Eugene Coste, E.M., Calgary, Alberta; D. B. Dowling, B.A.Sc., F.R.S.C., Geological Survey, Ottawa; J. A. Dresser, M.A., Sault Ste. Marie, Ontario; E. Dulieux, E.M., Ecole Polytechnique, Montreal; R. D. Falconer, LL.D., President of the University of Toronto; E. R. Faribault, B.Sc., F.G.S.A., Geological Survey, Ottawa; W. F. Ferrier, B.A.Sc., F.G.S., Toronto; W. L. Goodwin, D.Sc., F.R.S.C., Director of The School of Mining, Kingston; R. P. D. Graham, M.Sc., McGill University; Abbe R. Guimont, M.A., Ph.L., Laval University, Quebec; Eugene Haanel, Ph.D., Director of Mines, Canada Department of Mines, Ottawa; E. Haycock, M.A., Acadia University, Wolfville, Nova Scotia; Robert R. Hedley, M.E., Vancouver, B.C.; Elfric D. Ingall, Associate R.S.M., Geological Survey, Ottawa; R. A. A. Johnston, Geological Survey, Ottawa; Joseph Keele, B.Sc., Geological Survey, Ottawa; E. M. Kindle, A.B., M.S., Ph.D., Geological Survey, Ottawa; C. W. Knight, Assistant Provincial Geologist, Ontario Bureau of Mines, Toronto; H. Mortimer-Lamb, Secretary of the Canadian Mining Institute, Montreal; Lawrence M. Lambe, F.G.S., F.R.S.C., Geological Survey, Ottawa; Wm. W. Leach, B.A.Sc., Geological Survey, Ottawa; G. F. Matthew, D.Sc., F.R.S.C., St. John, New Brunswick; R. G. McConnell, B.A., Geological Survey, Ottawa; Jas. McEvoy, B.A.Sc., Toronto; John McLeish, B.A., Mines Branch, Dept. of Mines, Ottawa; W. Nichol, M.A., Queen's University, Kingston, Ontario; J. B. Porter, Ph.D., D.Sc., McGill University; Wm. Fleet Robertson, B.Sc., Provincial Mineralogist for British Columbia, Victoria, B.C.; F. H. Sexton, S.B., Director of the Department of Technical Education of Nova Scotia, Halifax, N.S.; J. L. Stirling, Chief Inspector of Mines for the Province of Alberta, Edmonton, Alberta; T. L. Walker, M.A., Ph.D., University of Toronto; Robert C. Wallace, M.A., Ph.D., University of Manitoba, Winnipeg; Jas. White, Secretary of the Canada Commission of Conservation, Ottawa; and Geo. A. Young, M.Sc., Ph.D., Geological Survey, Ottawa.

Honorary Councillors and Members of Finance Committee—In addition to the foregoing members of committees a large number of gentlemen are giving their assistance as honorary councillors and members of the Finance Committee, of which Mr. G. G. S. Lindsey, Toronto, is chairman. Western members of this last-mentioned committee include the following: P. Burns, Calgary, Alberta; R. P. Butchart, Victoria, B.C.; R. W. Coulthard, B.Sc., Blairmore, Alberta; Hon. C. W. Cross, B.A., LL.B., Edmon-

ton, Alberta; A. C. Flumerfelt, Victoria, B.C.; Frederic Keffer, M.E., Greenwood, B.C.; Robt. Kelly, Vancouver, B.C.; P. L. Nalsmith, Calgary, Alberta; M. K. Rodgers, M.E., Seattle, Washington; Hon. A. L. Sifton, B.A., K.C., Premier of the Province of Alberta, Edmonton; R. H. Stewart, B.A.Sc., Trail, B.C.; Alfred Thompson, M.D., C.M., M.P., Dawson, Yukon Territory; and O. E. S. Whiteside, M.Sc., Coleman, Alberta.

General Regulations.

Anyone wishing to obtain full information relative to the general regulations and all other matters connected with the Congress can obtain a copy of the second circular by writing to the secretary, Mr. W. Stanley Lecky, Victoria Memorial Museum, Ottawa, Ontario.

It may be mentioned here that no professional qualification for membership in the Congress is necessary. A fee of five dollars (\$5) must accompany each application for membership. Members will be entitled to take part in the meetings and discussions at Toronto, and to receive, after the meetings, a copy of the Transactions. Particulars of the various excursions, cost of same, etc., are all included in the second circular.

Topics for Discussion.

The following topics have been selected by the Executive Committee as the principal subjects for discussion:

1. Coal Resources of the World—Realizing the great value of the monograph on the iron ore resources of the world, published under the auspices of the eleventh session of the Congress at Stockholm, the Executive Committee of the twelfth session resolved to compile a similar work on the coal resources of the world.

With this object in view the co-operation of geological surveys, mining bureaus and eminent geologists and mining engineers was asked early in 1911. The responses have been so cordial that it is hoped to have ready for the meetings of the Congress a monograph which will include reports at length from over 50 countries and many smaller papers. The volumes, it is expected, will contain upwards of 900 pages, will be well illustrated by maps and sections, and will be accompanied by an atlas.

2. Differentiation in Igneous Magmas—Messrs. R. A. Daly, A. Harker, F. J. Loewinson-Lessing, D. Platanina, and H. Rosenbusch have already promised to present papers and take part in the discussion.

3. The Influence of Depth on the Character of Metalliferous Deposits—Messrs. J. F. Kemp, Louis de Launay, W. Lindgren and Malcolm MacLaren have signified their intention of contributing.

4. The Origin and Extent of the Pre-Cambrian Sedimentaries—The subject will be discussed by Messrs. H. Backstrom, C. K. Leith, J. Sederholm, and other distinguished workers.

5. The Sub-divisions, Correlation and Terminology of the Pre-Cambrian—Sir T. H. Holland, Messrs. A. C. Lawson, Ogawa, and J. Sederholm have al-

ready undertaken to present papers bearing on certain phases of this topic.

6. To What Extent was the Ice Age Broken by Inter-Glacial Periods—Messrs. T. W. E. David, G. De Geer, G. W. Lamplugh, A. Penck, F. B. Taylor, and others will present papers on this question.

7. The Physical and Faunal Characteristics of the Palaeozoic Seas, with Reference to the Value of the Recurrence of Seas in Establishing Geological Systems—Messrs. Charles Barrois, T. C. Chamberlain, Charles Schuchert, E. O. Ulrich, and C. D. Walcott have already promised to present papers.

8. Miscellaneous—In addition to papers on the topics mentioned, contributions on other subjects of interest will be welcomed. There will also be presented at the meetings of the Congress reports from committees appointed at the eleventh congress, reports from the committees of the twelfth Congress, and such other communications as the executive may consider should be brought to the attention of the Congress.

Exhibition of Specimens and Maps.

Exhibitions of specimens and maps to illustrate the geology of the districts traversed by the various excursions will be arranged at Ottawa, Montreal, Quebec and Toronto, but the exhibitions will not be confined to this one object and will be of general interest.

In addition, ample space will be provided at Toronto for any exhibits which authors of papers or others may wish to send. It is hoped that as far as the nature of the subject allows, authors will avail themselves of this provision. As the comparison of specimens from various countries adds greatly to the value and interest of the discussions and meetings of the Congress.

Exhibits should reach Toronto as soon as possible after the 1st of June and not later than the 1st of July. They should be addressed to Dr. W. A. Parks, Royal Ontario Museum, Bloor Street West, Toronto, Canada.

Written advice of their having been forwarded should be sent to the secretary Twelfth International Geological Congress, Victoria Memorial Museum, Ottawa, Canada. It should be noted that the exhibits should be sent to Toronto, but that any correspondence about them should be addressed to the secretary at his office in Ottawa.

The Department of Customs has consented to waive formality in this connection and exhibits for the meetings of the Congress in Toronto will enter Canada free of duty.

Excursions

Excursions, says the circular, have become an outstanding feature of the sessions, special facilities being provided in the country in which the meeting is held to enable the delegates coming from every portion of the world to make, at small expense and under expert guidance, a personal study of its geological structure and mineral resources.

The value of the excursions is not confined to what is seen and learned.

They afford the best opportunity for the members to fraternize and become acquainted with each other and each other's work and ideas. The informal discussions of the geological problems presented in the field and the information that is brought out concerning the methods employed in the various parts of the world in attacking and solving similar problems; and the use that has been found for neglected or little known substances—these and similar discussions are perhaps the most instructive and valuable features of the Congress.

Excursions have been arranged for as follows:

Before the meeting—A. 1. Quebec and Maritime Provinces; leaving Montreal in the evening of Sunday, July 13, and, after having visited a number of places in Quebec, New Brunswick, and Nova Scotia, arriving in Ottawa on the morning of Friday, August 1.

A. 2. Haliburton-Bancroft (Ontario). Leaving Montreal in the evening of Thursday, July 24, and arriving in Ottawa on the afternoon of Thursday, July 31.

A. 3. Sudbury-Cobalt-Porcupine (Ontario). Leaving Montreal on the morning of July 23, or Toronto in the evening of that day, and arriving at Ottawa on Friday, August 1.

A. 4. Niagara-Iroquois Beach (Ontario). Leaving Toronto on the morning of Monday, August 4, and returning to that city in the evening of Wednesday, August 6.

A. 5. Asbestos Deposits of the Province of Quebec. Leaving Montreal in the evening of Saturday, August 2, and arriving in Toronto on the morning of Thursday, August 7.

A. 6. The Morin Anorthosite Area (Quebec). Leaving Montreal on the morning of Monday, August 4, and returning the same evening.

A. 7. The Monteregian Hills (Quebec). Visiting rock quarries near Montreal on August 5; leaving that city on the morning of August 6, and arriving at Toronto on the morning of August 7.

A. 8. to A. 12., both inclusive, each of three days and ending at Toronto either on August 6 or 7. A. 8. Mineral Deposits of Ottawa district. A. 9. Mineral deposits near Kingston (Ontario). A. 10. Pleistocene, Montreal and Ottawa. A. 11. Ordovician, Montreal and Ottawa. A. 12. Southwestern Ontario.

During the meeting—Short excursions will be made to various localities in the immediate neighborhood of Toronto. Ten of these have been arranged for.

After the Meeting—Excursions westward.

C. 1. Transcontinental via Canadian Pacific and Canadian Northern railways. Leaving Toronto in the evening of Thursday, August 14. This excursion will be of interest to all classes of geologists. It will afford an opportunity of obtaining a general idea of Canadian geology between Toronto and the Pacific Coast along the main lines of the Canadian Pacific and Canadian Northern railways.

Westbound, the excursion will follow the main line of the Canadian Pacific

railway as far as Port Arthur; thence, along the Canadian Northern railway to Winnipeg; and from Winnipeg to the Pacific Coast, along the main line of the Canadian Pacific railway. The first section of the route lies within the Pre-Cambrian complex of northern Ontario and crosses the classic districts of Rainy Lake and Lake of the Woods. The second section of the route traverses the plains and prairies of the interior of the continent underlain by gently dipping Tertiary, Cretaceous and Paleozoic strata, the latter overlapping the Pre-Cambrian to the east. The third section traverses the Cordillera and terminates at Victoria on Vancouver Island. The general structure of the cross section of the mountain system and of the component mountain groups; the enormous thickness of strata which in certain districts afford continuous sections from Pre-Cambrian to Mesozoic; the widespread vulcanism and attendant phenomena of the western part of the section; and the general physiographical geography of the region, are displayed in a phenomenal manner.

Eastbound, the excursion returns over the main line of the Canadian Pacific railway through the Cordillera. From Calgary, situated on the plains in sight of the Rockies, the excursion returns to Winnipeg over the Canadian Northern railway, following a more northerly route through Saskatoon, than traversed westbound. From Winnipeg the Canadian Pacific railway is traversed to Toronto.

The itinerary provides for Banff being reached on August 22, and Vancouver and Victoria several days later. On return, Toronto will be reached in the evening of Saturday, September 6.

C. 2. Transcontinental, via Canadian Pacific, Grand Trunk Pacific, and National Transcontinental railways. Beside being of interest to all classes of geologists this excursion will be specially attractive to students of economic, stratigraphical, and glacial geology. Leaving Toronto in the evening of Thursday, August 14, Medicine Hat gas wells will be visited on Sunday, 17th, Blairmore coalfield and the Frank Slide on 18th, the enormous outcrop of coal at Corbin, and other parts of the Crowsnest coalfield on 19th. Nelson will be reached on 20th, the big copper mines at Phoenix (Boundary district) on 21st, the gold-copper deposits of Rossland on 22nd, up the Columbia river to Revelstoke on 23rd, reach Vancouver on 25th and Victoria on 26th. Commence return journey, leaving Vancouver on 27th, arrive at Toronto on morning of September 6. In connection with this excursion, subordinate excursions have been arranged for as follows:

Subordinate Excursion, No. 1—Phoenix to Victoria. Leave Phoenix at noon of August 21; be at Hedley, Similkameen, on 22nd; thence via Princeton, Tulameen, Nicola Valley, and Spence's Bridge to Vancouver, going to Victoria during night of 25th. No. 2—Rossland, via Slocan Lake to Victoria. Leave Rossland Friday, August 22nd; Bonnington Falls, Slocan Lake,

and New Denver glacier on 23rd; vicinity of New Denver and Silverton on 24th; New Denver to Revelstoke, via Nakusp on 25th; arrive Victoria on morning of 26th. No. 3—Nanaimo coalfield; by steamer from Vancouver to Nanaimo on Monday, August 25th, and thence to Victoria, to rejoin main excursion, on morning of 26th.

The official circular gives the following information relative to the foregoing excursion:

Westbound the excursion will follow the main line of the Canadian Pacific railway to Medicine Hat, thence over the Crowsnest branch of the Canadian Pacific railway to Kootenay Landing. From Kootenay Landing the excursion will traverse a combined water and rail route by way of Kootenay lake to Phoenix, thence to Rossland and from Rossland, by way of the Arrow lakes, to Revelstoke. From Revelstoke the excursion will follow the main line of the Canadian Pacific railway to the coast and will terminate at Victoria on Vancouver Island. The first section of the route, on which no stops will be made, passes through the Pre-Cambrian complex of northern Ontario. The second section of the route traverses the plains and prairies of the interior of the continent underlain by gently dipping Tertiary, Mesozoic and Palaeozoic strata, the latter overlapping the Pre-Cambrian to the east. The third section of the route crosses the eastern half of the Cordillera in the neighborhood of the International boundary; the western half is traversed

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Steamer Camosun—Every Wednesday at 11 p.m. (from Victoria Tuesday midnight) for Alert Bay, Sointula, Port Hardy, Shushartie Bay, *Fisherman's Cove, *Smith's Inlet, Rivers Inlet, Namu, Ocean Falls, Bella Coola, *Kimsquit.

Steamer Venture—Every Saturday at 9 p.m. for Campbell River, Alert Bay, Namu, Bella Coola, China Hat, Swanson Bay, Warke Island, Hartley Bay, Lowe Inlet, Claxton, Skeena River Canneries, Port Essington, PRINCE RUPERT, Port Simpson, Nass River, GRANBY BAY.

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along the main line of the Canadian Pacific railway. The structure of the Rockies and adjoining mountains and the immense thickness of sediments of which they are formed and which range in age from Pre-Cambrian to Mesozoic, are displayed in an admirable fashion. The widespread vulcanism and attendant phenomena of the western portion of the mountain section are well developed, and the physical geography of the whole section is clearly expressed. Special opportunities are afforded for the study of the character of the coal fields of western Canada, and of the important and interesting metalliferous deposits of southern British Columbia.

Eastbound, the excursion returns over the main line of the Canadian

examining a gold mining centre and a great silver producing area.

Excursions C. 5 and C. 6 will be in parts of Ontario. C. Yukon and Malaspina. Leaving Vancouver by steamer on Friday, August 29, Prince Rupert will be reached on 31st, Skagway on September 2, and Dawson, Yukon, on 5th. The return journey will be commenced on September 9; Skagway to Juneau on 13th; Yakutat bay and Malaspina glacier, 14th-16th; Treadwell gold mine, near Juneau, 17th; copper deposits near Granby bay (Hidden Creek mines), 19th; return to Vancouver 22nd. C. 9. Prince Rupert and Skeena River. Leaving Vancouver, Wednesday, August 27; Prince Rupert, 29th; Skeena valley and Hazelton, 30th; Vancouver, September 2.

Yukon; natural oil and gas in New Brunswick, Ontario and Alberta. Complete guide books and maps for each excursion published by the Geological Survey of Canada and Ontario Bureau of Mines under whose immediate supervision the excursions will be conducted, with assistance from various provincial governments and societies, including the Canadian Mining Institute. Special private trains, reduced fares, costs as low as consistent with good service, half single railway fares to professional members who wish to visit points not included in itineraries."

A new formation showing gold in every bucket is reported to have recently been struck in Conklins Gulch near Breakville.



LOOKING OVER THE NEW OILFIELD.

MR. I. E. SEGUR, A CALIFORNIA OIL EXPERT, AND GEO. W. SNYDER, OIL WELL CONTRACTOR, LOOKING DOWN THE VALLEY OF OIL OR SAGE CREEK, FLATHEAD VALLEY.

X marks the location of a wonderful spring of high grade, clear amber-colored oil. This oil is coming up through the ground and decayed vegetation. There being no rocks or shale exposed. A hole only two feet deep will yield a gallon of pure clear oil in a very short time. Mr. Segur estimates the yield of this seepage at ten barrels a day, while a few shallow wells should produce at least 100 barrels per day. A flow of gas can be had by thrusting a stick into the soil some three or four feet.

Pacific railway through the Cordillera, traversing the Selkirks and western Rockies by daylight. From Calgary, situated on the plains in sight of the Rockies the excursion will travel northward to Edmonton, thence over the Grand Trunk Pacific railway westward through the northern extension of the Rockies. Returning to Edmonton, the Grand Trunk Pacific railway will be followed to Winnipeg and thence east to the junction with the National Transcontinental railway, and by means of the latter the journey will be continued eastward through the Pre-Cambrian region of northern Ontario, to Cochrane. From Cochrane the route follows the Northern Ontario and Temiskaming railway by way of Porcupine and Cobalt, thus affording an opportunity of studying the general geology of the Pre-Cambrian district, and of

An Exceptional Opportunity.

A postcard invitation has been issued to mining engineers and others to join the Congress and take part in excursions and discussions. It gives the following brief summary of information:

"Exceptional opportunity offered mining and metallurgical engineers to visit the leading mines of Canada by the series of excursions to be held this summer (1913) in connection with the Twelfth Session of the International Geological Congress. Every facility to see not only the surface geology and plant but also to go underground. Coal in Nova Scotia and New Brunswick; asbestos in Quebec; silver, copper, nickel and gold in Ontario (Sudbury, Cobalt and Porcupine); coal in Alberta; lead, silver, copper, gold and coal in British Columbia; gigantic gold dredging in the

NEW FIELDS OF PARAFFIN OIL.

(From a Correspondent.)

Years ago there was a difference of opinion regarding the existence of oil in the Flathead district of Southeastern British Columbia. The Geological Department at Ottawa for a time refused to believe that oil, almost as pure as gasoline, existed in the Flathead valley, as represented by some of the old timers, namely Colonel Baker of Cranbrook, and Wm. Fernie of Fernie, B. C., who had taken samples of oil and sent them to Ottawa.

For this trouble they received a letter from Ottawa reflecting in a way upon their integrity to the extent of intimating that such fine quality oil did not exist in the Flathead district, also that the sample sent in had been manu-

factured. These gentlemen then requested that a representative of the Geological Survey Department be sent to verify by personal observation the conditions in the Flathead field.

Government Sends Geologist

Alfred R. C. Selwyn, a geologist of the Canadian Geological Survey, made a tour of inspection for the Government, and Mr. Wm. Fernie, accompanied him. When Mr. Fernie brought Mr. Selwyn to the big oil seepages on Sage creek, Mr. Selwyn said, "Well, the oil is here alright, and you didn't put it here either."

Later Dr. G. M. Dawson, then director of the Canadian Geological Survey Department, who was and is considered the greatest geologist of his time, says in his annual report, page

Segur the B. C. Oil & Coal Development Company of Victoria, has installed a modern standard drilling plant, capable of deep drilling, and will continuously carry on operations until the district is thoroughly tested. This same company is also installing tanks at the big seepage and putting into operation a small drilling rig at the big seepage, as it is estimated that a production of at least ten barrels per day can be had at from 50 to 200 feet in depth.

A hole only two feet deep will produce several gallons of pure oil a day, while a constant flow of petrolic gas can be had by thrusting a stick into the ground four or five feet.

These seepages of paraffin-base oil and petrolic gas, existing as they do in a district containing unbroken anticlinal folds with an impervious covering,

refiners, but to the builders and users of automobiles and gasoline engines.

A strike of asphaltum-base oil in the Flathead district would not cause any unusual interest, but this is a paraffine-base field, and the discovery of the pools whence the immense seepages come will inflame the world.

One drill is now working and many others are expected to begin operations this year. Oil leases have already changed hands on a basis of \$250,000.00 for 1000 acres.

Hundreds of people were in last year to inspect this new oil field and all went away carting bottles and cans of oil and instead of hundreds there will be thousands of people in there during the present year. To accommodate these people we understand that one



CORBIN, B. C.

The entrance to the Flathead Valley Oil Field from the Canadian side is through Corbin, a coal mining town situated on the Eastern British Columbia Railway, which railroad branches off from the Crow's Nest branch of the C. P. R. at McGillivray, B.C. The British Columbia Government has constructed a wagon road from Corbin south as far as the International Boundary, a distance of forty-six miles. Supplies for outfitting can be purchased from the Flathead Trading Company, Corbin. Saddle ponies from Andy Good, Crow's Nest, B. C.

23a, vol. 11, 1890, that "The indications of oil in the Flathead valley certainly seem to be sufficiently promising to warrant some outlay in development work." . . . It is reputed that Dr. Dawson was often consulted by many of the successful oil companies of the world, and such a strong endorsement as the above from a man of his ability certainly warrants development work being carried on as fast as possible.

Mr. I. E. Segur, who is reputed to be one of the most able oil experts of the day, after a thorough inspection of this Flathead district on two different occasions, says, "From surface indications there are excellent reasons to believe that a flow of oil will be had at a reasonable depth in various parts of this district. I do not think that there is a more promising oil field today anywhere." Acting on the advice of Mr.

which are the geologic conditions par excellence for bringing about the accumulation of oil in commercial quantities, make the success of development work now being carried on in a businesslike way, almost a certainty.

A small strike of such grade oil would cause the biggest stampede Canada has ever known. Thousands of oil men are keeping in as close touch as possible because of the increasing demand for paraffin-base oil.

Prospects of a Boom.

There is still plenty of asphaltum base oil to supply the demand for fuel and asphaltum paving, etc., but paraffine-base oil, because of the ever increasing demand for gasoline, is becoming exceedingly scarce, and is really becoming a serious problem, not only to oil

hotel and store at least, with livery in connection will be established this summer in the lower Flathead valley.

A strike of paraffine-base will revolutionize the industries of Canada to the same extent as it did in the United States when the Pennsylvania paraffin oil fields were opened up. The development of this new oil field, which has long been held back on account of lack of transportation facilities, now since the British Columbia Government has completed a road into this field will be looked forward to with keen interest.

The provincial mineralogist says in speaking of the big oil seepage on Sage Creek, that "It is not a question of seepage out of any surface material, but of a spring coming up from the formation underlying the surface deposit, and carrying oil."



PLAN SHOWING LOCATION OF NEW OIL FIELD.

HEDLEY GOLD MINING COMPANY'S REPORT FOR 1912.

The annual report of the Hedley Gold Mining Company for the year 1912, includes the reports of the President (Mr. I. L. Merrill), the general superintendent, and the treasurer, as follows:

Report of the President.

"During the past year things in general, at mines and mill, have gone along very well.

"We acquired the adjoining claims known as the 'Windfall Group' lying to the northwest of our property. Our exploration work demonstrated that the ores pass into this acquired territory, which promises well for a long life to our mines.

"For detailed information I submit the reports of the superintendent and the treasurer."

Report of the General Superintendent

Mr. Gomer P. Jones, general superintendent, reported as under:

"For the year 1912 your mill has treated 70,455 tons of ore, having an average value of \$11.19 per ton, or a total value of \$788,715.05. The value of the gold won was \$748,133.14—an extraction of 95 per cent. The profits were as shown in the treasurer's statement.

"Owing to the increase in tonnage, which used practically all the power available, we have been able to do but little development work on the company's properties excepting the Nickel Plate, where stoping and development work in the orebody has been carried on between the No. 3 and No. 4 tunnel levels, and the ore won has proven to be of a higher grade than estimated last year. The usual reserve tonnage of 10,000 tons of broken ore has been maintained.

"Mining below the No. 4 tunnel level has been very satisfactory and has proven that the orebody, as indicated last year by diamond drill, is a valuable addition to the reserves. An incline shaft (No. 5) has been sunk in the ore for 420 ft., three levels have been opened and a fourth commenced. Drifting and sinking prove this ore to be about 16 ft. in width between walls, and of an average value of \$14 per ton. At the collar of the incline the length of the ore shoot is 130 ft.; at the 100-ft. level it has been drifted on for 180 ft., and on the 3rd level for 80 ft. These drifts are in good ore all the way, and, including the bottom of the incline, all the faces are in ore. This incline is in good shape to ship from, with ore-pockets in each level and plenty of good ground for stoping.

"A section of the ground under the Nickel Plate ore beds has been proven by diamond drill; also a section of the company's property lying to the north;

but owing to delayed negotiations for an option on the Windfall group of mining claims, adjoining the Iron Duke (one of the company's original claims), we did not commence drilling on this ground until July. By October seven holes were put down, and three of these showed good value. The last two holes were discontinued before they entered the ore zone, owing to the severe cold weather freezing the water in the long pipe-lines. These holes would, if completed, have aided us considerably in making an estimate of the reserve tonnage; however, we have no hesitation in stating that the minimum quantity of reserve ore, as shown by development and diamond drill, available in the Nickel Plate and Iron Duke claims, is 413,000 tons, and that this ore will average at least \$11.35 per ton.

received instructions to sink and have started another incline shaft, to be known as the Dickson incline. The intention is to sink this to 3000 ft. in depth. It is located so as to be under all the known orebodies, and will have payable ore above it continuously. The probability is that it will be extended next year.

"The Sunnyside No. 4 incline has been extended 160 ft. and is in promising country. Development work in the Silverplate showed some good ore, but it is apparently cut off by a large diorite dike. Both these properties are in a good formation with favorable conditions.

"The cost per ton for mining and milling for the year has been reduced

pect to see the ore reserves increased during 1913.

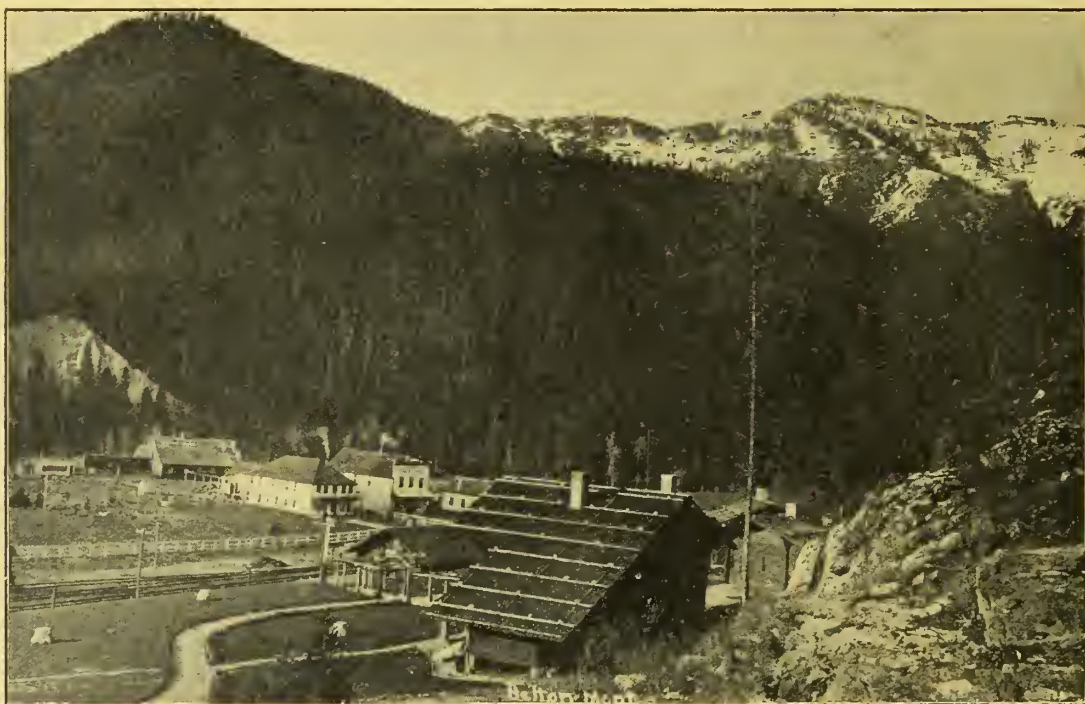
"Development was as follows: Nickel Plate mine, sinking 420 ft., drifting 510 ft., raising 110 ft.; Silver Plate mine, drifting 140 ft.; Sunnyside mine No. 4, sinking 160 ft.; total development 1,340 ft.; diamond drilling 6,380 ft."

Report of the Treasurer.

The report of the treasurer, Mr. C. D. Fraser, follows:

"Attached is balance sheet as at close of December 31, 1912, and detailed statement of earnings.

"The net profits for the year were \$385,880. The dividends for the year aggregated \$360,000, or 30 per cent.



BELTON, MONTANA; GLACIER NATIONAL PARK.

Another entrance to the Flathead Valley Oil Field is had by way of Belton, situated on the main line of the Great Northern Railway. A wagon road extends north from Belton leading through the Glacier National Park to the International Boundary where it connects with the Corbin road; distance, 50 miles. Outfitting supplies can be had here from Mr. Dows' general store, and saddle ponies from the Belton livery. Comfortable tourist hotels are located here and at different points in the Park.

"While the above-mentioned ground was being tested, an option was held for the purchase of the Windfall group, comprising five claims, namely, the Windfall, Morning, Winchester Fraction, Big Horn, and Czar, and on October 30 the purchase of these properties was consummated. The terms of the option did not allow time to prospect the ground, as it would have been necessary to drill each hole 500 ft. at least before striking the ore-bearing sedimentary beds, but from indications in the hole drilled nearest the optioned property and the high value in the remaining holes, we consider these claims valuable.

"To mine the new orebodies as well as the other orebodies below the No. 4 level in the Nickel Plate mine, we have

53 cents, and the total cost 73 cents, although we have been paying a higher rate of wages, and the following additions, improvements, etc., have all been charged to operating expenses: Removing the old and installing the new boiler (150 h.p.), together with the cost of the boiler; new diamond drill; new hoist; improvements to the flume; general improvements to the mill; and all mine development.

"The mill has been kept in first-class repair and is doing good work; the water-flume is also in better shape than last year, and changes have been made on the tramway, so that its operation is more satisfactory.

"Altogether we believe the last year to have been most prosperous. We ex-

upon the issued capital stock. The undivided profits, after payment of all dividends, were \$226,841.34 at the close of the year.

"New mining claims were acquired at a cost of \$145,913.13, which outlay was capitalized. All other expenses of every kind during 1912 were charged to operating expenses. These included new 150 h.p. boiler, diamond drill, hoist, etc., as shown in the report of the general superintendent.

"The low earnings for December were caused by extra heavy development work, which compelled the crushing of an unusual proportion of low-grade ore. In addition much trouble was caused during that month by snow. (The January (1913) earnings were normal)."

Balance Sheet at End of 1912.**Assets.**

Mines, mine-buildings, machinery, reduction plant, etc.—

Original investment	\$ 920,000.00
Net expenditures for additions to plant	127,294.08
Net expenditures for new mining claims	149,913.13
	<u>\$1,193,207.21</u>
Cash	233,634.13
	<u>\$1,426,841.34</u>

Liabilities

Capital stock, authorized issue, 150,000 shares, \$10 par	\$1,500,000.00
Less 30,000 shares in treasury	300,000.00
	<u>\$1,200,000.00</u>
Undivided profits January 1, 1912	\$ 200,961.34
Net profits for 1912	385,880.00
	<u>\$586,841.34</u>
Less dividends paid in 1912	360,000.00
Undivided profits at close of year	226,841.34
	<u>\$1,426,841.34</u>

Operations and Earnings for 1912.

Month.	Tons milled.	Assay value.	Recovery at mill.	Expenditures	Profits
January	5,701	\$10.70	\$56,298.64	\$29,669.72	\$26,628.92
February	5,010	9.49	45,513.84	27,431.75	18,082.09
March	6,263	11.60	70,077.84	30,712.89	39,364.95
April	5,326	10.55	54,683.93	29,427.62	25,256.31
May	5,636	10.64	57,778.52	26,711.00	31,067.52
June	6,027	10.13	58,200.96	28,042.22	30,158.74
July	6,110	9.97	58,750.33	27,801.91	30,948.42
August	5,900	12.11	66,720.19	28,627.97	38,092.22
September	6,108	16.38	96,055.85	31,054.73	65,001.12
October	6,101	11.69	66,637.58	28,399.42	38,238.10
November	6,003	11.57	64,487.36	35,654.20	28,833.16
December	6,270	9.07	52,928.10	38,719.65	14,208.45
Totals.....	70,455	\$11.19	\$748,133.14	\$362,253.14	*\$385,880.00

* Including \$9,834.69 interest earned on funds of the company during 1912.

11. Copper Mountain district.

12. Greyhound mine, Deadwood camp.

"The development on Nos. 1-9 of the foregoing, on which \$57,918.39 was expended, proved to be so encouraging that the company concluded to acquire them and made payments, on account of the option bonds, amounting to \$21,000. On the last two very extensive explorations were conducted, but further development was, for the time being, abandoned. The company, however, acquired one-half interest in the Frisco and 13 other claims in the Voigt camp on Copper mountain, and subsequently acquired a mortgage which covered the other half interest on these latter claims, which are all embraced in the Copper mountain district.

"Indications are that in the Princess camp the company will develop a copper mine of considerable extent and value, and the work still in progress is intended to determine the extent of ore-bodies and the method of their treatment. It appears the products of these mines can be successfully concentrated and, if so, profitably transported to be treated at the company's smeltery. The exploration work under way at the close of the fiscal year will be continued.

"During the year under review the company has added to its holdings of New Dominion Copper Company securities bonds of the par value of \$237,675, which cost \$122,249.25.

"Operations for the fiscal year were on the whole encouraging and satisfactory. With the opening of the new mines and the completion of the plans now under way for supplementing the ore reserves, which appear to be assured, it is believed stability will be given to the company for the future.

"The management desires to express its obligation to the operating force, and to the intelligent co-operation, fidelity, and zeal of its officers, for the results obtained during the year."

Acting General Manager's Report

Mr. Frederic Keffer, acting general manager, reported as follows:

"For the fiscal year of thirteen months ended December 31, 1912, the following review of the company's operations is submitted:

"Shipments of ore were made from the company's mines, as under:

	Tons.
Mother Lode	410,686
Wellington group	9,935
Lone Star and Washington	2,101
Napoleon	17,118
Queen Victoria	1,080
Total	440,920

"Mother Lode Mine—The transverse stope method of mining has been followed throughout the year, and has proved most successful in extracting the maximum quantity of ore at a minimum of cost. The tonnage shipped was the greatest for any one year in the history of the mine, and the cost of crushed ore f.o.b. cars at the mine has been the lowest, namely, 56.58 cents per ton. The drilling of new ground

ANNUAL REPORT OF THE BRITISH COLUMBIA COPPER CO., LTD.

The annual report of the British Columbia Copper Company, Ltd., for the fiscal year ended December 31, 1912, follows:

President's Report

Mr. Newman Erb, president of the company, reported as under:

"The report of the acting general manager, with auditor's certified balance sheet and profit and loss account for the fiscal year ended December, 31, 1912, is herewith respectfully submitted by your board of directors.

"The results of operations include the month of December, 1912, by reason of a change made in the fiscal year, as a matter of convenience, to correspond with the calendar year, and the reports therefore cover a period of 13 months.

"The quantity of ore treated at the company's smeltery was 740,589 tons, of which 443,022 tons was derived from the company's mines; the remainder having been custom ore. Metals produced were: Fine copper 11,146,811 lb.; silver, 142,025 oz.; gold, 25,863 oz. The proceeds of these metals amounted to \$2,483,663.96.

"The net results of operations were \$425,985.40, being the largest in the

history of the company. From these profits there were paid during the period covered by the reports two dividends, Nos. 4 and 5, aggregating \$177,512.70.

"During the fiscal year the company paid on account of new properties and in their exploration and development \$229,489.46. Because of the great importance of supplementing the ore reserves of your company, as has been referred to in previous reports, and in furtherance of the policy adopted, options through bonds, were taken upon a number of properties which your operating officials believed were of sufficient promise to justify exploratory work. These consisted of the following, all in British Columbia, and were considered properly tributary to the company's smeltery:

1. Ada B. group, in Princess camp.
2. Silver Dollar claim, in Princess camp.
3. Annie L. claim, in Princess camp.
4. Princess Maud claim, in Princess camp.
5. Red Eagle claim, in Princess camp.
6. Triangle Fractional claim in Princess camp.
7. Eureka group, near Nelson.
8. Queen Victoria group, near Nelson.
9. L. H. group, near Silverton.
10. Riverside group on North Fork of Kettle river.

has been kept well ahead of requirements, there having been at the close of the year 5000 holes, aggregating 65,000 lin. ft., in readiness for blasting.

"The ore reserves have not been materially increased during the year. The average grade of ore mined was below the normal grade of former years.

"The mining plant has been maintained in good condition, and the large quantity of ore has been extracted without serious accidents to either men or machinery.

"Wellington Camp Group—The ore that had been developed here was mined out during the seven months in the earlier part of the year, and in June the mine was closed for the time being. There is a large area of unprospected territory included within the company's holdings in this camp, but owing to extensive prospecting in other localities it was thought best to postpone further operations at the Wellington group until a later period.

"Lone Star and Washington—This mine was operated in June, July and August only as, on account of the refractory nature of the ore, but little of it could be smelted directly. Working tests on large lots of the ore, using ordinary water concentration methods, did not prove sufficiently successful to warrant the erection of a concentration plant. We are, however, making tests on other lines, which so far have proved satisfactory, and lead to the expectation that the problem of successful concentration and elimination of the refractory constituents of the ore will shortly be solved. The 300,000 tons of developed ore in this property, comprised within less than seven per cent. of its area, together with the comparatively high grade of the ore, make the ultimate solution of the problem of treatment a most important matter.

"Napoleon—The 17,118 tons of sulphide flux shipped from the Napoleon mine during the year was of better grade, both as to gold and sulphur contents, than that for a number of earlier years. Mining and tramway costs were reduced to an average of \$1.588 per ton of ore. The ore shipped was offset by new ore developed, leaving the ore reserves unchanged. These reserves are sufficient to serve all needs for many years to come. The machinery, plant, and aerial tramway have been maintained in good condition.

"Through delays in receipt of machinery and by reason of further alterations found necessary at the Napoleon mill, it was late in September before all the problems relating to the treatment of the ore were finally and successfully solved. The quantity of ore milled was 6,483 tons. On account of the increased expense of mining and milling the oxide ore in the winter season, when in the open quarry work it becomes mixed with snow and freezes into masses not readily handled, it was decided to close the mill until the spring of 1913, after which a steady and successful run should be had.

"Queen Victoria—This property, which is situated nine miles west from Nelson, B. C., was purchased in November, 1912. The ore in it is an altered limestone similar in self-fluxing prop-

erties to the Boundary district ores, but it contains a higher percentage of copper. The mine is equipped with an electrically-driven compressor plant, and is connected with the Canadian Pacific railway by an aerial tramway.

"The months of November and December were occupied mainly in getting the mine into general working shape, and in opening new ground for stoping. In December, 1080 tons of ore was shipped.

"Smeltery—The smeltery at Greenwood was operated steadily throughout the year and smelted a larger quantity of ore than during any similar period in its history. During the first two and a half months until a sufficient supply of coke was secured for the entire plant, only two furnaces were operated. The total quantity of ore smelted during the thirteen months of the fiscal year was 740,589 tons, as compared with a total of 608,945 tons for the twelve months of the fiscal year ended November 30, 1911. The sources of the material smelted were:

	Tons.
From B. C. Copper Co.'s mines.....	443,022
Custom ores	284,575
Converter slags	12,992
Total	740,589

"The quantity of coke consumed was 103,154 tons.

"The converter slag included:

	Tons.
B. C. Copper Co.'s ores	914
Custom ores	4104
Clay	1205
Total	6223

"There was produced 11,259,140 lb. of blister copper, containing:

Gold	25,862.681 oz.
Silver	142,025.06 oz.
Copper	11,146,811.00 lb.

	1908.	1909.	1910.	1911.	1912.
Yield of copper per ton of B. C. Copper Co.'s copper-bearing ores	17.8 lb.	17.8 lb	18.0 lb.	16.4 lb.	13.6 lb.
Yield of gold and silver per ton of B. C. Copper Co.'s ores.....	\$0.985	\$1.03	\$1.23	\$1.133	\$0.762
Average price realized for copper	\$0.13504	\$0.1308	\$0.12778	\$0.1233	\$0.16664
Costs of producing, refining and marketing per lb. of fine copper, after crediting expenditure with value of gold and silver contents of ore	\$0.09996	\$0.09829	\$0.09048	\$0.11635	\$0.13855
Costs of handling ore per ton, including all charges from ore in place to sale of the contained metals	\$ 2.632	\$2.683	\$2.730	\$2.882	\$2.4596

"In concluding this report the writer wishes to bear testimony to the uniformly loyal support and excellent work of all those in charge of the various departments of the company, whose collective work has enabled the company

"No material additions were made to plant during the year, the machinery as a whole having been maintained in its normal condition.

"It is planned to use basic instead of acid lining for the converters, should this be found practicable without considerable additions to the plant. Through decreased cost for clay and elimination of labor in relining converters it is probable that a decided reduction in the cost of converting can be effected.

"Prospecting Operations—During the year 23 groups of mining claims in British Columbia or adjacent parts of the United States were examined by our engineers. This work resulted in the bonding of the Eureka group, near Nelson, B. C., and of a group of mineral claims on Copper mountain, near Princeton, B. C., known collectively as the Princess group. On these two properties exploration is being vigorously pushed by both hand-work and diamond-drilling, with generally favorable results to date. Much exploration work was also done in Voigt's camp on Copper mountain, with fairly successful results. The bond on the group in Voigt's camp was allowed to lapse, but negotiations are now in progress for renewal. Among the groups examined are three others of much promise; it is planned to explore these during the coming season.

"Operating Costs—The yield in copper, gold, and silver for the past year was less per ton of ore than for any other year in the history of the smelting works; the costs per ton for ore-handling, etc., were lower than for any other year. On account of the low yield of metals, the cost of producing copper per pound was 12.85 cents, notwithstanding the very low handling costs.

"The following table gives a comparison of the principal items for the last five years:

to attain the results set forth in the statement of the auditors."

Profit and Loss Account.

"For thirteen months ended December 31, 1912.

"To operating disbursements—

Mining, smelting, freight, refining and selling charges, general office and administration expenses, maintenance of plant and equipment.....	\$1,570,205.16
To Custom ore purchased	495,087.12
By proceeds of metal shipments, including those unsettled for at December 31, 1912	\$2,483,663.96
By miscellaneous earnings	7,613.72
To balance carried down	425,985.40
	\$2,491,277.68
	\$2,491,277.68

By balance brought down	\$ 425,985.40
By balance at November 30, 1911	717,264.11
To Dividends Nos. 4 and 5	\$ 177,512.70
o balance carried to balance sheet	965,736.81
	<hr/>
	\$1,143,249.51 \$1,143,249.51

Balance Sheet, as at December 31, 1912.**"Liabilities****Capital Stock—**

Authorized \$3,000,000 in 600,000 shares of \$5 each.

Issued596,709 shares of \$5 each

Less in treasury— 5,000 shares of \$5 each

591,709 shares of \$5 each \$2,958,545.00

Sundry Creditors—

Accounts payable, open and accrued\$289,971.68

Accounts payable, covered by cheques in transit 46,938.73

336,910.41

Reserve for employers' liability 5,365.32

Reserve for contingencies 5,000.00

10,365.32

Profit and loss account 965,736.81

\$4,271,557.54**"Assets**

Properties at cost, including smeltery site and plant, mines and other equipment, and shares in other companies\$3,771,444.82

Metals and smeltery products, supplies, etc., as per certified inventories 193,054.96

Copper on hand and in transit to refinery 214,769.09

Prepaid insurance and taxes 4,763.37

Accounts receivable 3,923.64

Cash on hand and in banks in New York and Greenwood 83,601.66

\$4,271,557.54**PLATINUM IN BRITISH COLUMBIA**

The following is an excerpt from the chapter on "Platinum and Allied Metals," by Mr. Waldemar Lindgren, in the United States Geological Survey's valuable report entitled, "Mineral Resources of the United States, 1911." (Part I., p.p. 1000-1001).

"British Columbia—The presence of platinum metals in British Columbia has been known since 1887. The upper branches of Similkameen river are known to contain platinum, especially the North Fork, usually referred to as the Tulameen river. A considerable production was at one time maintained from these gold and platinum-bearing placer deposits. (See Camsell, Chas; 'Platinum Mining in the Tulameen District,' Journal Canadian Mining Institute, Vol. XIII, 1910.) Camsell estimates the total production of crude platinum from this district at 9860 oz. The richest platinum ground was found on Tulameen river between the mouths of Slate and Champion creeks. On Tulameen river no platinum was found above the mouth of Champion creek, and below Slate creek the grains became finer and the quantity gradually decreased. The platinum in some cases was present in a ratio of 1 to 3 by weight as compared to gold. During 1911 active prospecting has been carried on, and it is stated that workable ground has been discovered. Dredging is the process which it is intended to apply to the deposit. During the last few years the annual production of platinum from some of these placers has amounted to only a few ounces. Statements in the press are to the effect that the depth to bedrock averages 12

ft. A company organized in Vancouver has leased some 20 miles of Similkameen and Tulameen rivers from the Government. The production for 1911 is estimated at 30 oz. Much of the gold and platinum in this district is coarse and the nuggets have not travelled far from their original source. Much of the gold is still embedded in quartz, while the platinum is often associated with chromite, olivine, and pyroxene. Kemp mentions platinum intergrown with olivine and octahedral chromite from the district. One of these specimens shows the contemporaneous development of the three minerals very clearly. The rock from which the platinum was derived is probably a belt of basic intrusives, mainly peridotite, having a flanking border of pyroxenite. Kemp concluded that the original source of the platinum was in both the peridotite and the pyroxenite, and this conclusion is corroborated by Camsell. The heavy minerals associated with platinum, beside those mentioned, are magnetite and native copper. An analysis of the crude platinum gave, according to G. C. Hoffman, quoted by Camsell, the following results:

Platinum	72.07
Palladium	0.19
Rhodium	2.57
Iridium	1.14
Osmiridium	10.51
Copper	3.39
Iron	8.59
Osmiridium	10.51
Gangue	1.69
Total	100.15

"Kemp assayed a number of specimens of platinum-bearing rocks, such as serpentine, chromite, pyroxenite, and peridotite, from this district and found

in most of them traces of platinum. Some of the selected chromite gave half an ounce of platinum per ton. Other samples contained from 0.1 to 0.3 ounces of the metal. It is exceedingly improbable, however, that valuable deposits of platinum will be found in the parent rock.

"Reports were current during 1911 of a discovery of platinum metals at and near the Granite-Poorman mining property, a few miles from Nelson. A well-defined dike bearing these metals is said to have been traced for several miles in the general direction of Forty-nine-mile creek and Kootenay river. A statement is made by E. Jacobs in the Canadian Mining Journal of September 1, 1911, that the rock containing the platinum metals is serpentine and probably an altered peridotite. The predominant metal is said to be palladium, though platinum and other allied metals are also said to occur. Whether the find is of economic importance is not certain. The existence of a new metal named canadium has been reported in this serpentine rock, but the discovery has not been confirmed."

In his observations in the "Determination of the Platinum Metals" Mr. Lindgren includes the following:

"The correct determination of platinum metals is somewhat difficult, and mistakes are often made by inexperienced chemists and assayers. It is difficult to say how much of the mistakes found in reports of new discoveries of platinum in the current press is due to such inexperience and how much to deliberate fraud. The most ridiculous statements are often made. A statement was made, for instance, in 1911, of a discovery of an 'immense bed of Osmium near Boise, Idaho.' The analysis was given as follows:

Gold, oz. per ton	2.3
Iridium, oz. per ton	0.1
Osmium, oz. per ton	20.00
Tungsten oxide, per cent	5.00
Tln, per cent.	0.25
Cobalt, per cent.	0.5
Nickel, per cent.	1.00

"Other statements were current of a discovery near Merlin, Oregon, of a rock containing tin and platinum. It was claimed to contain from 1 to 65 oz. of platinum per ton and said to occur 'in a mineralized zone 600 ft. wide, with 15 ft. of spherulitic gangue and 8 ft. of pitchblende.' It is unfortunate that such statements should find even temporary credence."

(Note—The statement attributed by Mr. Lindgren to Mr. E. Jacobs was contained in a quotation made by the latter, as follows: "E. R. Widdowson. . . informed the 'Nelson Daily News' that 'palladium is the predominating metal of the platinum group, discovered near Nelson by Mr. A. Gordon French. It is obtained from a serpentine dike which is probably an alteration of a peridotite dike. The dike material varies in color from a dark green to a dark yellow, and is so soft that it can be mined with a pick. The metal is a hard silvery white substance, but is not visible in any of the ore I have assayed. In all, I have made some 50 or 60 determinations for palladium, and the other rare metals for my various clients, and I am well able to confirm the presence of the metals discovered by Mr. French.'")

PERSONAL AND GENERAL

Movements and News of Prominent Mining Men.

Written for the B.C. Mining Exchange by E. Jacobs

(Concluded from last month.)

Mr. J. Edgar McAllister, formerly general manager for the British Columbia Copper Co., left New York on a trip to England in March. He was at Greenwood early in June. Later in the year he opened a branch office in Toronto, Ontario.

Mr. T. L. McAllister, superintendent of the Noble Five group of mines at Cody, Slocan, was successful in developing a lot of high-grade silver-lead-zinc ore in the Deadman mine of that group, and resumed shipment of ore after the lapse of a number of years, during which no output was made.

Sir Richard McBride, Minister of Mines for British Columbia, had the satisfaction of seeing in 1912 the year of greatest mineral production in the history of mining in British Columbia.

Prof. R. S. McCaffery, head of the mining engineering department of the University of Idaho, was in Rossland camp in May with a party of his senior students.

Mr. R. G. McConnell, of the Geological Survey of Canada, did geological work in Skeena district, and on Princess Royal and Texada islands.

Mr. H. J. McDonald supervised the important development work done at the Granby Consolidated Co.'s Hidden Creek copper mine, near Observatory inlet.

Mr. C. H. McDougall was superintendent of the Consolidated Mining and Smelting Co.'s Sullivan group and St. Eugene lead-silver mines in East Kootenay, and made a substantial output of ore from the former.

Mr. Jas. McEvoy, of Toronto, was on the British Columbia coast in the spring, arranging to take a party to do development work in the Groundhog coal basin, but ill health necessitated his returning to Toronto.

Mr. Jas. McGregor, of Nelson, continued to perform his duties of inspector of metalliferous mines in Kootenay and Boundary districts.

Mr. Thos. McGuckie on January 1 succeeded Mr. Thos. Graham as general superintendent for the Western Fuel Co., Nanaimo, remaining in that capacity throughout the year.

Mr. Robert McKee continued his connection with the placer-gold mining industry of Atlin camp.

Mr. D. A. McKenzie did another year's good work as superintendent of the Ruth-Hope silver-lead mines, near Sandon, Slocan.

Mr. Alex. McKillop made Vancouver his headquarters in 1912, as in previous years.

Mr. John McLellan, after having spent part of the year on one of the Queen Charlotte islands, went to England on a trip.

Mr. Alfred McMillan had charge of the Le Roi Mining Co.'s works at Northport, Washington.

Mr. Anthony J. McMillan, as liquidator of the Le Roi Mining Co., continued his endeavors to realize on the company's remaining property, in the best interests of shareholders in the company.

Mr. J. H. McMillan became manager of Nos. 5 and 6 mines of the Canadian Collieries (Dunsmuir) Ltd.'s Union colliery, Vancouver island, on the resignation of Mr. John Matthews.

Mr. W. G. McMorris, managing director of the British Pacific Coal Co., spent much of the year on the company's coal property on Graham island of the Queen Charlotte group.

Mr. Wm. Graham McMynn, for years gold commissioner at Greenwood, was transferred to Golden early in the summer. Later in the year he was promoted to another Provincial Government appointment, in the Coast district which necessitated his discontinuing his official connection with mining in the province.

Mr. A. J. McNab resigned as superintendent of the Consolidated Mining and Smelting Co.'s smelting works at Trail to accept charge of the Mason Valley Mines Co.'s smelter at Thompson, Nevada.

Mr. J. A. McPhee took part in the very satisfactory further development of the Rambler-Cariboo silver-lead mine, in McGuigan basin, Slocan.

Mr. Harold T. Nation again accompanied the provincial mineralogist on his field trips and assisted him in the office of the Bureau of Mines.

Mr. D. H. Nellis continued to give his attention to a group of mineral claims in the vicinity of Woodberry creek, Ainsworth mining division.

Mr. W. Thos. Newman was among those who attended the meeting of the Western Branch of the Canadian Mining Institute, held in Vancouver in the early part of the year.

Mr. John Newton performed his official duties as inspector of metalliferous mines, and of some of the coal mines, in the Coast district.

Mr. W. E. Newton was assayer for the Van-Roi Mining Co., operating near Silvertown, Slocan Lake.

Mr. A. F. Noel remained in Lillooet district, in which increasing attention was paid to mining.

Mr. F. S. Norcross had a busy time as superintendent of the Rawhide mine, in Phoenix camp, from which mine a large quantity of copper ore was shipped to the B. C. Copper Co.'s smelter at Greenwood.

Mr. W. G. Norrie, after having been for the greater part of the year on the staff of Mr. A. G. Larson, of Vancouver, was appointed superintendent of the Lucky Jim zinc mine, near Bear Lake, Slocan, as from November 1.

Mr. W. H. North was assistant manager for the Standard Silver-Lead Mining Co., with his headquarters at Silvertown, Slocan lake.

Mr. Geo. A. Ohren, of Vancouver, had an active year as representative of the Canadian Ingersoll-Rand Co.

Mr. Fred H. Oliver, of Spokane, Washington, who is interested in a mining property in Erie camp, was an occasional visitor to that part of Nelson mining division.

Mr. Chas. E. Oliver was at Camp McKinney part of the year.

Mr. J. O'Sullivan maintained his assay office and laboratory in Vancouver, and was fully occupied there as an assayer and chemist.

Mr. W. Nelson Page was on Graham island in the fall, examining mining properties.

Mr. Edward W. Parker, Statistician of the Mineral Resources Division of the United States Geological Survey, was a welcome invited guest at the meeting in Vancouver of the Western Branch of the Canadian Mining Institute.

Mr. Geo. H. Parker had charge of the Van-Roi Mining Co.'s concentrating mill on Four-mile creek, near Silvertown, Slocan.

Mr. J. L. Parker spent the latter part of the year on his farm in southwestern Alberta.

Mr. Frank E. Pearce took charge of the Inland Empire gold mine and stamp mill, near Paulson, on the Columbia & Western Railway, and was crushing ore before the close of the year.

Mr. H. Peploe Pearce was at Birch creek, in Atlin camp.

Mr. Edward Peters was occupied in connection with mining in Ymir camp and other parts of Nelson mining division.

Mr. Fred S. Peters was superintendent of the Le Roi mine for the Consolidated Mining and Smelting Co., and during the latter half of the year steadily increased the output of ore from that mine.

Mr. T. D. Pickard paid several visits to Hedley camp, where he was interested in the development of mining property held under option of purchase.

Mr. Warburton Pike was again in the Thibert Creek country, in Cassiar district.

Mr. Noble Pirrie did much assay work in Vancouver.

Mr. Ralph G. Poe was foreman on one of the groups of mineral claims on Copper mountain, Similkameen district, on which the B. C. Copper Co. did development work, with a view to purchase.

Mr. Chas E. Pomeroy superintended work in the vicinity of Cumsheewa inlet, for the Queen Charlotte Islands Mining and Development Co.

Mr. W. B. Pool remained in charge at the Nugget gold mine, Sheep creek, at which, though, little important work was done during the year.

Mr. Louis Pratt was absent from the province the greater part of 1912, on business in connection with the mining interests of the P. Burns Syndicate.

Mr. E. Priest made Vancouver his headquarters in 1912.

Mr. Thos. G. Procter removed from Nelson to Victoria. He made several visits to Kootenay in the capacity of managing director of the Lucky Jim Zinc Mines, Ltd.

Mr. M. E. Purcell, superintendent of the Consolidated Mining and Smelting Co.'s Centre Star-War Eagle group of gold-copper mines in Rossland camp, must have had gratifying results from his work, for the company's general manager reported "our Rossland mines show an increase in the amount of ore developed with, we believe, a higher average value." Mr. Purcell was unanimously elected chairman of the Western Branch of the Canadian Mining Institute at its meeting held last spring.

Mr. P. W. Racey, of Rossland, remained on the engineering staff of the Consolidated Mining and Smelting Co. of Canada.

Mr. A. E. Rand returned to the province in the Spring from a visit to England, and since then has been giving his attention to the development of the Dundee and other mining properties in Nelson mining division, in which he is largely interested.

Mr. R. B. Rathbun, chief electrician for the Granby Consolidated Co., late in the year paid a visit to Garfield, Utah.

Mr. Wm. Reese was transferred last summer from the Centre Star mine, Rossland, to the Consolidated Co.'s smelting works at Trail, as master mechanic.

Mr. John L. Retallack, of Kaslo, returned in May from a visit to England, and afterward visited mining camps in various parts of the province. As representative of Beer, Sondheimer & Co., he arranged for delivery to the works of that firm of much of the zinc produced in British Columbia in 1912.

Mr. L. B. Reynolds spent the greater part of the year in Nelson division and other parts of Kootenay.

Mr. J. E. Rinta was in local charge of the Rambler-Cariboo mine, in which much more silver-lead ore was made available for stopping, and preparations were made for a comparatively large output when the concentrating mill should be ready for being operated.

Mr. A. B. Ritchie left New Denver for Montreal about June 1. Returning in the autumn, he joined the engineering staff at the Consolidated Co.'s Molly Gibson silver-lead mine on Kokanee creek, Nelson mining division.

Mr. E. J. Roberts, of Spokane, superintendent for the Corbin Coal and Coke Co., spent an autumn vacation in the South, and returned to his headquarters about the end of November.

Prof. Milnor Roberts, dean of the School of Mining, University of Washington, Seattle, took part in the Vancouver meeting of the Western Branch of the Canadian Mining Institute.

Mr. R. Roberts retired from the management of the Jewel mine stamp mill, in Greenwood mining division, late in the year.

Mr. Wm. Fleet Robertson, provincial mineralogist, spent the field season in the Groundhog coal field and other parts of the northern country, and returned to Victoria at the end of September. In October he went to Nelson to investigate in connection with the reported finding of platinum metals in dikes within a few miles of that city.

Mr. M. K. Rodgers did not spend much of the year in British Columbia, having gone to Mexico for health reasons.

Mr. Elias Rogers, president of the Crow's Nest Pass Coal Co., visited the company's mines in the Crows Nest district during the summer.

Mr. J. M. Ruffner, manager of the North Columbia Gold Mining Co., remained in Atlin camp until well into the winter, before making his customary annual visit to his home in Cincinnati.

Mr. Thos. Russell resigned in July from the position of superintendent of the extension colliery of the Canadian Collieries (Dunsmuir) Ltd.

Mr. James Rutherford returned to Victoria in September, after having been in Great Britain for a time.

Mr. L. Saville was appointed manager for the British Pacific Coal Co., and took charge of development of the company's property on Graham island.

Mr. Wm. Hittell Scherzer, of Ypsilanti, Michigan, spent several weeks of last summer on the Soho group, in McGuigan basin, Slocan.

Mr. S. J. Schofield, of the Geological Survey of Canada, contributed to "Economic Geology," an article on the "Origin of the Silver-lead Deposits of East Kootenay," in which district he had done much geological work.

Mr. John Shanks was superintendent of the Crow's Nest Pass Coal Co.'s Coal Creek colliery, from which a comparatively large output of coal was made.

Mr. E. Shannon continued mining at the Enterprise, on Ten-mile creek, Slocan Lake district, for a while, later giving some attention to the Neepawa.

Mr. C. F. Sherwin, superintendent at the Bluebell mine, Riondel, Kootenay lake, was kept fully occupied at that mine, which made considerable production of lead ore.

Mr. Alexander Sharp continued his connection with the P. Burns Syndicate as its mining engineer.

Mr. Alex. Smith had the satisfaction of seeing connection made through from the low-level adit beyond the Last Chance property to the old workings of the Surprise mine, and of opening ore shoots in the new ground thus made accessible.

Mr. F. L. Smith, after having overlooked grading work on the new road from below Silverton toward the L. H. mine, was appointed superintendent of the Queen Victoria mine, near Nelson, shortly after it had been purchased by the B. C. Copper Co.

Mr. W. Gus Smith, resident engineer at the Corbin Coal and Coke Co.'s colliery in Southeast Kootenay, directed construction work on an extension of the British Eastern Railway from Corbin up to the "big showing" of coal on the mountain above the company's mine.

Mr. Wm. Springer was engaged in developing the Idaho-Alamo mines that were being worked by the Finch Syndicate under option of purchase.

Mr. Thos. A. Spruston was appointed manager of No. 7 mine of the Canadian Collieries (Dunsmuir) Ltd.'s Union Colliery, Comox district, Vancouver island.

Mr. Herbert Stanton was, on June 13, gazetted Gold Commissioner for Victoria mining district.

Mr. D. C. Stephens was superintendent of the Tacoma Steel Co.'s Marble Bay gold-copper mine, near Van Anda, Texada island.

Mr. J. H. Stevens, mining engineer, made Windermere, East Kootenay, his headquarters.

Prof. C. A. Stewart was with the University of Idaho party of mining engineering students during their ten days' visit to Rossland camp in April.

Mr. J. D. Stewart was appointed to the charge of the Provincial Government Mine Rescue Station at Nanaimo, Vancouver island.

Mr. Robert H. Stewart, general manager for the Consolidated Mining and Smelting Company of Canada, Ltd., was elected a vice-president of the Canadian Mining Institute last spring. In September he went to Toronto to attend the company's annual meeting, and in November proceeded to Europe on a business visit.

Mr. R. T. Stewart was appointed mine manager at the Corbin colliery, succeeding Mr. T. H. Williams.

Mr. G. Stilwell, superintendent for the Silverton Mines, Ltd., continued the development of the company's Hewitt-Lorna Doone mines, in Silverton camp, near Slocan lake.

Mr. J. Street remained as superintendent of the group of mines in White-water camp, operated by J. L. Retallack & Co.

Mr. H. H. Sutherland, of Toronto, accompanied Mr. H. H. Johnson, of London, to the Big Interior mine, Alberni district, in September.

Mr. Lewis Stockett, general manager of the Hosmer Mines, Ltd., was appointed general superintendent of the Canadian Pacific Railway Co.'s coal mines, with headquarters at Calgary, Alberta.

Mr. Thomas R. Stockett, manager of the Western Fuel Company, in September entertained at Nanaimo the members of the Flying Legion from San Francisco. The year was one of marked progress at the company's coal mines in Nanaimo district.

Mr. Robt. Strachan, inspector of coal mines for the Northern East Kootenay Inspection District, accompanied the chief inspector of mines to the Convention of the Mine Inspectors' Institute, held in Ohio in June.

Mr. W. J. Sutton continued his connection with the Canadian Collieries (Dunsmuir), Ltd., as geologist and engineer.

Mr. John Swanson was foreman of the Granby Consolidated Co.'s big copper mines in Phoenix camp, Boundary district.

Mr. J. R. Swedberg, of Nelson, sold the Queen Victoria mine to the B. C. Copper Company late in the fall.

Mr. F. M. Sylvester, assistant to Mr. Jay P. Graves, vice-president and general manager of the Granby Consolidated M. S. and P. Co., paid periodical visits to the company's properties in British Columbia.

Mr. G. C. Taylor, who was with Mr. Norcross at the Rawhide mine, Phoenix, went to the San Poil mill in Republic camp, Washington, in July, as assistant superintendent.

Mr. H. E. Taylor, of the mining engineering department of the State College of Washington, Pullman, Washington, was in the Groundhog Mountain coal field with Mr. Geo. Watkin Evans last summer.

Hon. Wm. Templeman, of Victoria, formerly Minister of Mines in the Dominion Government, gave an interesting address before the semi-annual meeting of the Canadian Mining Institute in Victoria last September, on the subject of the work of the Canadian Department of Mines.

Mr. W. C. Thomas, metallurgist, made Vancouver his headquarters throughout the year. After Mr. Thos. Kiddie had gone on a visit to Arizona, Mr. Thomas conducted the last of the demonstrations at Van Anda, Texada island, in connection with the use of oil in smelting copper ores in the blast furnace.

Mr. Wm. Thomlinson continued his connection with the development of the mineral resources of the country in the vicinity of Slocan lake. In the summer he accompanied Mr. E. Jacobs on a visit to a number of the better-known mines in the Slocan.

Prof. Francis A. Thomson, head of the department of mining engineering at the State College of Washington, Pullman, was in Boundary and Rossland camps in May with his senior mining engineering students; spent a few days with his parents at Victoria in August, and in

October examined the Silver Hoard mine in the capacity of consulting engineer to the owning company.

Mr. John A. Thomson, of Vancouver, managing director of the Mt. Stephen Mining Syndicate, had a busy year with the Monarch mine and concentration plant at Field, from which was produced a considerable quantity of lead-silver and zinc concentrates.

Mr. B. L. Thorne had an active year with the Hosmer Mines, Ltd., which made a good production of coal and coke at its colliery in the Crow's Nest Pass.

Mr. Colin Timmons, formerly of Yaxco, Guerrero, Mexico, last summer examined the Kingston mining property, in Camp Hedley, Similkameen, for San Francisco clients.

Mr. R. F. Tolmie, Deputy Minister of Mines, was kept fully employed the year through in carrying out the onerous duties of his official position.

Mr. J. A. Tompkins was given charge of a new department arranged by the Canadian Collieries (Dunsmuir), Limited, this including the superintendence of shops, shipping docks, and other works at Union Bay, Vancouver island, the shipping port for the company's large coal mines in Comox district.

Mr. J. M. Turnbull, one of the Consolidated Mining and Smelting Co.'s mining engineers, was chosen last August as one of the members of the Senate of the University of British Columbia. Among other examinations of mining properties he made for his company was that of the Red Cliff, which mine he visited in October.

Mr. John Vallance remained as superintendent of the Standard silver-lead mine, near Silverton, at which much important development work was done, a large quantity of ore shipped, and many surface improvements were made.

Mr. John Waldbeser, manager of the Emerald mine, near Salmo, besides shipping to Trail more lead ore than in 1911, added to mine plant and buildings and did much development work.

Mr. Thomas Wall continued the development of the La France mine, on La France creek, east of Kootenay lake, for the Chicago company owning it, and developed valuable bodies of silver-lead ore.

Dr. C. D. Wallcott was engaged in studying the Cambrian of the Rocky mountains in the vicinity of Yellowhead pass, for the Geological Survey of Canada.

Mr. E. E. Ward was superintendent of the Silver Hoard mine, in Ainsworth camp, at which there were some interesting developments during the year.

Mr. Bruce R. Warden, who continued to make Vancouver his headquarters, has not been so prominently associated with the mining industry as in former years.

Mr. J. L. Warner gave much attention to the South Belt of Rossland camp, and had prospecting work done on the Richmond group and other claims thereabouts.

Mr. Ernest Waterman, manager of the Princeton Coal and Land Co., was active in his endeavors to extend the market for Princeton coal.

Mr. Wm. Watson returned to West Kootenay from New York in April and resumed mining and milling operations at the property of the Motherlode Sheep Creek Mining Co., in Sheep Creek camp. Late in the year he retired from the management of the company, and was succeeded by Mr. Geo. E. Farish, also of New York.

Mr. W. J. Watson, manager for the Tyee Copper Co., remained at Ladysmith, Vancouver island, but mining and smelting operations were not resumed by the company.

Mr. G. B. Webster was in the Slocan Lake country the greater part of the year.

Mr. Frederick R. Weekes, of New York, was at the properties on Copper mountain, Similkameen, that were being developed by the British Columbia Copper Co.

Mr. Fred M. Wells did a lot of development work at the property of the Surf Inlet Gold Mines, Ltd., on Princess Royal island, and made an excellent showing in the company's mine there.

Mr. A. D. Wheeler, of Ainsworth, further developed the Gallagher mine, which is in that camp.

Mr. Roscoe Wheeler, superintendent of the Hedley Gold Mining Co.'s 40-stamp mill and cyanide plant at Hedley, Similkameen, last summer visited several gold mills in Kootenay and Boundary districts.

Mr. Bruce White during part of the year gave his attention to the Noonday mine, above Cody, Slocan; Mr. Byron White saw active work in progress at both the Slocan Star and at his copper property in Whitehorse camp, Yukon; Mr. Oscar White continued to superintend the important development work in progress at the Slocan Star, while his son, Mr. Clyde White, was also engaged in connection with mining in the Slocan.

Mr. D. E. Whittaker, Assistant Assayer, was, as usual, fully occupied in the Provincial Government Laboratory, Victoria.

Mr. J. A. Whittier remained on the coast in 1912, having been resident in Vancouver.

Dr. Alfred W. G. Wilson, of the Mines Branch, Canada Department of Mines, paid another visit to the province, in connection with his investigations into the copper industry of Canada.

Mr. D. G. Wilson was mine manager at the Hosmer colliery, Crow's Nest Pass.

Mr. G. B. Wilson was manager of the Marblehead marble quarry, situated a few miles north of the northern end of Kootenay lake.

Mr. W. R. Wilson, general manager for the Crow's Nest Pass Coal Co., made a large production of coal and coke at the company's several mines and coke

ovens in the Crow's Nest district. At a meeting of the Canadian Mining Institute held in September, Mr. Wilson was chosen to be chairman of the newly organized Rocky Mountains branch. Afterward he was good enough to offer prizes to a total value of \$150 for papers on indicated mining subjects, by members of the branch.

Mr. E. R. Widdowson continued to practise assaying at Nelson, and took a prominent part in the local endeavours to confirm the claims of Mr. A. Gordon French that metals of the platinum group occur in Nelson district.

Mr. Geo. Wilkinson remained as manager for the Pacific Coast Coal Mines, Ltd., and besides managing the company's Fiddick colliery, saw the extension of development operations on other properties also owned by the company.

Mr. Geo. Sheldon-Williams continued to edit the British Columbia Mining Exchange and Engineering News, published monthly in Vancouver.

Mr. Percy Williams, mining engineer, of Vancouver, was engaged in consulting and advisory mining engineering work.

Mr. R. P. Williams, of Vancouver, long actively identified with the Canadian-Rand and Ingersoll-Rand companies, visited many mining camps in 1912, in connection with the sale of machinery and plant.

Mr. Thos. H. Williams, for some time previously mine manager at the Corbin colliery, was in May gazetted an inspector of mines in the province, and during the remainder of the year carried out inspection duties in the Crow's Nest district.

Mr. Wakely A. Williams, smelter superintendent for the Granby Consolidated Co., made several trips from Grand Forks, Boundary district, to Granby bay, Observatory inlet, in connection with important power and smelting works being established there.

Mr. E. R. Wolfe, manager of the Florence Mining Co.'s Hope mine, superintended the work done on that property, which is in Alnsworth mining division.

Mr. H. M. Wolfelin, mining engineer, who had charge of the United States Bureau of Mines' Mine Rescue Training Station on the campus of the University of Washington, Seattle, took part in the meeting of the Western Branch of the Canadian Mining Institute, held in Vancouver early in 1912.

Mr. Geo. W. Wooster, treasurer and director of the Granby Consolidated M. S. and P. Co., besides being manager of the company's head office in the province, at Grand Forks, Boundary district, went up to Granby bay to see for himself the progress being made at the company's Hidden Creek mines, and the new works in connection therewith.

Mr. Hayes W. Young, instructor in metallurgy at Stanford University, California, visited smelting works in the Boundary district and at Trail last summer. Happening to be in Greenwood at the time the Western Branch of the Canadian Mining Institute was

holding a meeting there in June, he was cordially welcomed by the members present.

Mr. W. E. Zwicky, of Kaslo, manager for the Rambler-Cariboo Mines, Ltd., had the gratification of finding ore last June on the 1400-ft. level of his company's mine in McGuigan basin, thus proving that the ore shoots previously opened on various levels from the 700 down to the 1200 continues down to the greatest depth yet reached in the development of this important silver-lead mine. Mr. Zwicky also had charge of development work on the Rambler-Cariboo Extension, Rio and Payne mines, all in Siocan district.

OBITUARY

SOME MINING MEN WHO DIED IN 1912.

During 1912 a number of men who had been actively connected with the mining industry of British Columbia, died, among them having been the following:

Hill, Alexander—On April 24, in London, England. Mr. Hill was a member of the mining engineering firm of Alexander, Hill & Stewart, which firm has long been consulting engineers to the Le Roi No. Two, Ltd., and, since its organization, also to the Van-Roi Mining Co.

Hobson, John B.—On January 9, in Victoria. Mr. Hobson was for many years engaged in hydraulic placer-gold mining in Cariboo district, and his death was widely regretted.

Lover, P. W.—Mr. P. W. Lover was for years with the B. C. Copper Co. A short time before his death he resigned as superintendent of the Rawhide mine, in Phoenix camp.

Moore, D. W.—On July 13, at Revelstoke. "Dave" Moore was well known in the various mining districts of the province. For years he was orebuyer for the Trail smelting works.

Warren, Edward G.—On July 4, at Greenwood, Boundary district. Death was the result of an automobile accident. Mr. Warren was general manager for the B. C. Copper Co., and his untimely death was much deplored, for he was well and favourably known.

MOUNT IDA GROUP LOOKING WELL.

A Salmon Arm despatch of the 24th inst. says:

A. Miller, the manager of the Mount Ida group of claims, which are now being developed by the Mount Ida Mining and Development Company, paid a visit of inspection yesterday. He reports that the tunnel is now in 157 feet, and as the ore car has now been installed, work having been delayed on account of heavy snow, much more rapid progress will be made.

The tunnel all the way in shows that the rock is mineral bearing, and the left hand (or northwest) side, shows strong values in copper and silver.

RECIPROCITY IN SECURITIES.

Mr. Henry Clews, the well-known New York broker, says in the annual number of The Monetary Times, that there is no sound reason why there should not be a much wider market for Canadian securities in the United States than there is; for there are none better, and both countries have much in common and very clear ideas of each other's opportunities and methods. Already there is a very considerable amount of United States capital invested in Canadian enterprises, more than is generally appreciated on either side of the border. But so far such investments have been confined to a few wealthy Americans or to the big industrials, so that the average American investor has had little interest in the wonderful development of Canada, particularly in comparison with the vast influx of British capital during the last few years.

At Stanley, J. Perkins is running a tunnel on the North Star mine.

GENERAL MEETING AT ROSSLAND, B. C.

The Fifteenth general meeting of members of the Western Branch of the Canadian Mining Institute will be opened at

**ROSSLAND, BRITISH COLUMBIA,
ON THURSDAY EVENING, MAY 22,
1913**

when routine business will be transacted and several papers having particular reference to the Mining Industry will be read and discussed.

All members of the Canadian Mining Institute in good standing residing in Western Canada or the neighbouring parts of the United States are, by virtue of such membership, also members of the Western Branch. As this will be a Joint Meeting with members of the Spokane Local Section of the American Institute of Mining Engineers, members of this Branch are earnestly requested to co-operate in making it a decided success. They are cordially invited to contribute papers on matters relating to Mining or Metallurgy for reading at it; also, to kindly notify the Secretary that they will do so, if such be their intention.

Among the subjects for discussion will be that of Accidents in Metal Mines, and in this connection it is intended to show a Pulmotor and explain its operation and effectiveness.

The Provisional Programme is: Thursday evening; reading and discussion of papers. Friday, visit to Rossland Mines in daytime, and reading and discussion of papers in evening. Saturday, visit to Consolidated Mining and Smelting Company of Canada's Smelting Works and Electrolytic Lead Refinery at Trail; evening, amusement.

Non-members will also be heartily welcome to attend, and to take part in the discussion of papers that shall be submitted to the meeting.

E. JACOBS,
Secretary of Western Branch of C. M. I.
Victoria, B.C., April 21. 1913.

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Vancouver, B. C., March, 1913.

EDITORIAL.

Considerable space is devoted in this issue of the B. C. Mining Exchange to the forthcoming International Geological Congress, its programme and its extensive and varied itinerary. The giving of such full details is warranted by the importance of the event, for it is an occasion from which much benefit may with certainty be expected to accrue to the mining industry throughout Canada, and more especially in British Columbia. The fact that our great natural resources in the shape of mineral wealth will come under the keen and appraising eyes of men whose experience of this branch of development and industry has been world-wide, and whose names carry weight, by reason of their hard-won experience, in every leading financial centre, is a point that should be kept in mind, not merely by every mining man in the country, but by every man, no matter what his occupation, who desires the advancement of our banner industry. For our mineral wealth is an undoubted and undisputed fact now—only needing the capital to develop it to advantage. This is not an exaggeration, but a plain state-

ment of fact—the best evidence of which is the continued and increasing success which so many of our leading mines are attaining, where capital has been invested under the guiding hand of experience and business ability. That the coming Congress will mean a larger and more important influx of capital to develop our mines is a matter upon which there is no doubt—for the simple reason that we have “the goods” and our scientific visitors can see them for themselves. It is, however, a thing greatly to be desired that the work of those who have in charge the administration and conduct of the programme of the Geological Congress should receive the most full and hearty support of every man in this country—whether mining man or not—for the growth of this industry benefits men of every occupation. It is for this purpose largely that so much attention has been paid to the subject in the present issue.

The prospects of the oil industry in Western Canada would appear to be improving, if one may judge from the particulars given by a correspondent, on another page, regarding the developments now taking place in the Flathead country in Southeast Kootenay and Alberta. That operations having in view the development of Canada's oil resources are being carefully watched abroad is shown by the fact that public reference was made in England the other day to the subject, in view of certain present supplies of oil being cut off through international complications. It is gratifying to learn that so promising an outlook as our correspondent indicates lies before the B. C. Coal & Oil Development Co. This company is largely backed by local money and by men from the Middle West, and the prospects appear excellent for their enterprise and confidence reaping a rich reward.

The death of Mr. J. Pierpont Morgan removes a notable figure from the world of finance. He was that rather unusual figure in American capitalistic circles—a man who had begun life as a millionaire. At his death his wealth was enormous, but there is nothing to indicate that the colossal “pile” was the result of any indulgence on Mr. Morgan's part in that unscrupulous game of raiding markets and industries which has enriched so many of his contemporaries and brought about the bitter hatred of the millionaire as a class which is so ominously significant a fact in the United States today. It is not on record that Mr. Morgan wrecked any banks or

railroads, or other financial or industrial institutions in which the savings of his less wealthy fellow-citizens were invested. Nor does it appear that he was in the habit of “cornering” any of the necessities of life with a view of making the common people pay more for their food. On the contrary, it is well-known that he came to the rescue of the country in the panic of 1907, and used the influence of his vast wealth to prevent a national disaster of appalling magnitude. He was a man of artistic tastes, caring little for vulgar ostentation, and it might, from all one can learn, be no bad thing if more of the “money kings” of the Great Republic modelled themselves on his lines. Mr. Morgan was, of course, much abused by the demagogue and vote-hunter; but then, nowadays everybody is abused who has got five dollars more than somebody else. The possession of wealth is no crime—the ability to use that wealth decently and creditably is a virtue. From all evidence to hand, Mr. Morgan had that virtue.

It is beginning to be apparent that the time is coming nearer rapidly when the iron ores of this province will be in considerable demand. We expect to have a good deal to say on this subject shortly, but, in the meantime, would recommend those prospectors and others, who are acquainted with promising iron indications in any part of the province, to possess themselves of all particulars regarding the nature and extent of such deposits, in order to be able to avail themselves promptly of any demand. We are making the above remarks by request.

In British Columbia last year the total production in natural products was \$100,000,000, and in manufactured products \$20,000,000, (est.) This means a production per head for every man, woman and child in the province, of over \$300.

During 1912 over 2,000 miles of railway was under construction in British Columbia, involving an expenditure of \$25,000,000. The Government itself spent over \$5,000,000 on 1,500 miles of roads and trails.

T. J. SMITH FINANCIAL AND MINING BROKER

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LATEST METAL MARKETS.

(From Chicago Mining and Engineering World.)

Silver:—Quotations for silver per fine ounce at New York and per standard ounce at London for the week ending March 26, were as follows:

	New York Cents	London Pence
Mar. 20	56½	26 3-16
Mar. 21	56½	26 3-16
Mar. 22	56½	26 3-16
Mar. 24	56½	26 3-16
Mar. 25	56½	26 1-16
Mar. 26	57	26½

MONTHLY AVERAGE PRICES OF SILVER

	New York			
Month.	1913 High.	1913 Low.	1913 Avg.	1912 Avg.
January	63½	61½	62.928	56.259
February	62½	59½	61.625	59.043
March	62½	59½	61.625	58.360
April	62½	59½	61.625	59.265
May	62½	59½	61.625	60.754
June	62½	59½	61.625	61.265
July	62½	59½	61.625	60.815
August	62½	59½	61.625	61.600
September	62½	59½	61.625	63.364
October	62½	59½	61.625	63.504
November	62½	59½	61.625	62.750
December	62½	59½	61.625	63.390
Year	60.837			

Copper—There was a fairly good demand for copper last week by consumers and producers were able to book moderate orders for March and April on a basis of 15 cents, as few consumers are willing to place orders with second hands, though the latter offer concessions of ½ to ¾ cent because of the inability of these dealers to make deliveries as described. A few small lots in second hands are still being offered at 14½ cents, and in some instances at 14¼ cents, but they are failing to attract purchasers as the holders cannot promise deliveries.

Estimates on the March report of the Copper Producers' Association, which will be issued on April 8, still indicate a large increase in exports and domestic consumption and therefore suggest an addition to surplus stocks, ranging from 5,000,000 to 10,000,000 lbs., unless the output is augmented much more than forecasted.

Prices remained practically stationary last week. Neither in the domestic market nor in Europe have there been any developments indicating any change in the general situation.

Exports have continued at a good rate, totalling so far this month 24,627 tons.

Quotations for copper per pound at New York and per long ton of 2240 lbs. at London for the week ending March 26, were as follows:

	Lake.	Elec.	Cast	Standard London
Mar. 20..15½—1	15½—15	14½—3	£64	5 0
Mar. 21..15½—1	15½—15	14½—3	64	5 0
Mar. 22..15½—1	15½—15	14½—3	64	5 0
Mar. 24..15½—1	15½—15	14½—3	64	5 0
Mar. 25..15½—1	15½—15	14½—3	64	5 0
Mar. 26..15½—1	15½—15	14½—3	65	5 0

MONTHLY AVERAGE PRICES OF COPPER

	New York—Lake Superior			
Month.	1913 High.	1913 Low.	1913 Avg.	1912 Avg.
January	18	16½	17.116	14.526
February	16½	15½	15	14.606
March	16½	15½	15	14.911
April	16½	15½	15	16.092
May	16½	15½	15	16.391
June	16½	15½	15	17.612
July	16½	15½	15	17.536
August	16½	15½	15	17.794
September	16½	15½	15	17.724
October	16½	15½	15	17.753
November	16½	15½	15	17.750
December	16½	15½	15	17.750
Year	16.695			

	New York—Electrolytic.			
Month.	1913 High.	1913 Low.	1913 Avg.	1912 Avg.
January	17½	16½	16.983	14.425
February	16½	15	15.717	14.435
March	16½	15	15.717	14.853
April	16½	15	15.717	16.003
May	16½	15	15.717	16.326
June	16½	15	15.717	17.505
July	16½	15	15.717	17.418
August	16½	15	15.717	17.694
September	16½	15	15.717	17.706
October	16½	15	15.717	17.745
November	16½	15	15.717	17.750
December	16½	15	15.717	17.750
Year	16.634			

Tin—The tin market was quiet and steady last week with but slight fluctuation in prices. Dealers were not inclined to operate extensively on account of the Easter holidays. The metal exchanges were closed on Friday and Saturday. Prices in the New York market show an advance of about ¼ cent per pound in all positions. Spot contracts were available at 46½ cents at the close with nearby deliveries held at the same figure. Activity at the tin plate mills was a bullish factor in the trade. Receipts for the week amounted to 1845 tons. Light offerings held prices firm in London. Spot standard contracts closed at £210 5s per ton, with 3-month deliveries at £206 15s, a gain of £1, and 15s, respectively. Trading was quiet all week. Singapore tin closed at £208, c. i. f. London, an advance of 15s, compared with a week ago.

The total arrivals of tin so far this month are estimated at 5500 tons. Stocks March 1 were 1951 tons, making the supplies for the month 7451 tons to meet the demand from the interior, which is said to be good, indicating that deliveries will be large.

Quotations for tin at New York and at London for the week ending March 26, were as follows:

	New York		London	
Mar. 20..46.25—46.00	£210	0 0—206	15 0	0
Mar. 21..46.25—46.00	£210	0 0—206	15 0	0
Mar. 22..46.25—46.00	£210	0 0—206	15 0	0
Mar. 24..46.25—46.00	£210	0 0—206	15 0	0
Mar. 25..46.75—46.50	212	0 0—208	5 0	0
Mar. 26..46.75—46.50	214	6 0—210	10 0	0

MONTHLY AVERAGE PRICES OF TIN

	NEW YORK.			
Month.	1913 High.	1913 Low.	1913 Avg.	1912 Avg.
January	51.25	49.50	50.414	43.275
February	50.30	47.30	48.738	43.345
March	50.30	47.30	48.738	42.690
April	50.30	47.30	48.738	43.970
May	50.30	47.30	48.738	46.055
June	50.30	47.30	48.738	48.046
July	50.30	47.30	48.738	44.665
August	50.30	47.30	48.738	45.849
September	50.30	47.30	48.738	49.232
October	50.30	47.30	48.738	50.073
November	50.30	47.30	48.738	49.869
December	50.30	47.30	48.738	49.899
Year	46.330			

Lead—The lead market was held at 4.30 cents bid for spot and 4.40 cents asked throughout the week. For East St. Louis delivery spot, March, April and May offered at 4.22½ cents, with 4.15 cents bid.

London cables quoted soft Spanish at £16 on Thursday.

Quotations for lead at New York and London for the week ending March 26, were as follows:

	New York Cts. per lb.	London Per Ton
Mar. 20	4.40—4.30	£16 0 0
Mar. 21	4.40—4.30	£16 0 0
Mar. 22	4.40—4.30	£16 0 0
Mar. 24	4.40—4.30	£16 2 6
Mar. 25	4.40—4.30	£16 2 6
Mar. 26	4.40—4.30	£16 12 6

MONTHLY AVERAGE PRICES OF LEAD

	New York			
Month.	1913 High.	1913 Low.	1913 Avg.	1912 Avg.
January	4.37½	4.25	4.301	4.435
February	4.35	4.25	4.30	4.068
March	4.35	4.25	4.30	4.167
April	4.35	4.25	4.30	4.213
May	4.35	4.25	4.30	4.164
June	4.35	4.25	4.30	4.395
July	4.35	4.25	4.30	4.669
August	4.35	4.25	4.30	4.581
September	4.35	4.25	4.30	5.071
October	4.35	4.25	4.30	5.088
November	4.35	4.25	4.30	4.633
December	4.35	4.25	4.30	4.300
Year	4.482			

Spelter—The spelter market was lower last week, with closing prices at the New York Metal Exchange as follows: Spot was offered at 6.30 cents, with 6.15 cents bid; March was offered at 6.25 cents, with 6.15 cents bid; April was offered at 6.25 cents, with 6.10 cents bid; May was offered at 6.15 cents, with 6 cents bid. At the close of the week East St. Louis delivery spot was 6 cents bid; March, 6 cents bid, 6.10 asked; April, 5.90 cents bid, 6.10 cents asked; May, 5.85 cents bid, 6.05 cents asked; June, 5.75 cents bid, 6 cents asked.

The last London cables quoted G. M. B. spelter at £24 10s.

Spelter quotations at New York and London for the week ending March 26, were as follows:

	New York Cts. per lb.	London Per Ton
Mar. 20	6.30—6.15	£24 10 0
Mar. 21	6.30—6.15	£24 10 0
Mar. 22	6.30—6.15	£24 10 0
Mar. 24	6.30—6.15	£24 10 0
Mar. 25	6.30—6.15	£24 10 0
Mar. 26	6.30—6.15	£24 10 0

MONTHLY AVERAGE PRICES OF SPELTER

	New York				London.			
Month.	1913 High.	1913 Low.	1913 Avg.	1912 Avg.	1913 High.	1913 Low.	1913 Avg.	1912 Avg.
Jan. 7.40	6.40	7.192	6.505	26.115	26.721			
Feb. 6.80	6.15	6.406	6.541	25.385	26.457			
Mar.	6.817	...	26.035			
April	6.799	...	25.646			
May	6.85	...	25.520			
June	7.011	...	25.765			
July	7.229	...	26.173			
Aug.	7.042	...	26.434			
Sept.	7.553	...	27.067			
Oct.	7.550	...	27.551			
Nov.	7.429	...	26.756			
Dec.	7.331	...	26.880			
Year	7.053	...	26.317			

It has been announced that the February orders of Allis-Chalmers Co. included four Blake crushers, 16 sets of rolls, 4 Hancock jigs, and a double-drum electric hoist, for the Britannia Mining and Smelting Co., Britannia Beach, British Columbia.

Coast and Island Mining

W. J. Elmendorf, Manager of Portland Canal Tunnels, Ltd., Makes Extensive Report on Company's Operations—Excellent Progress made on Work—Will Make Enormous Difference to Camp—General News of Mines, Etc.

THE PORTLAND CANAL TUNNELS, LTD.

The following is the complete report just issued by Mr. W. J. Elmendorf, manager of the Portland Canal Tunnels, Ltd.:

To the President and Directors,
Portland Canal Tunnels, Ltd.,
Victoria, B. C.

Gentlemen:—

The Portland Canal Tunnels, Ltd., is now constructing a tunnel about 3 1-2 miles north from the town of Stewart at the head of the Portland Canal. The portal of this tunnel is close to the railway line of the Canadian Northeastern and the concentrating mill of the Portland Canal Mining Company, and is about 250 feet above tide water.

During the years 1910 and 1911 mining operations of considerable extent demonstrated the existence, and approximate boundaries of what was named by Mr. R. G. McConnell, of the Dominion Geological Survey, the "Portland Canal Fissure zone." This zone extends, at least, from the Jumbo and Ben Bolt mining claims on the south through the claims of the Stewart Mining & Development Company on the north, a distance of more than 4 miles. In its course on the surface, in addition to the properties named, the zone traverses the property of the Portland Canal Mining Company, the Glacier Creek Mining Company, the Portland Wonder Company, the O. K. Fractional, Chicago 1 and 2, and one or two other mining claims. Within this zone one or more ore-bearing veins have been found, and to a greater or less extent explored on practically every mining claim through which it passes.

From the Portland Canal about 8,000 tons of ore were mined and concentrated, and about 2,000 tons of concentrate shipped. Shipments were also made from the Little Wonder and O. K. Fraction, and considerable ore developed on the Ben Bolt, Stewart, and Glacier Creek mines, which, with reasonable operating and transportation costs would show a good margin of profit. Unfortunately, the workings of these mines are so located that the placing of their ores on the railway cars entails, in most cases, a prohibitive expense.

It was primarily for the improvement of this condition that the driving of a tunnel from the railway to the Fissure Zone was proposed; other, and perhaps not less important objects were the, exploration of the several veins at material depth—the principal Portland Canal Mine workings are 2,200 feet above the tunnel level—access to considerable "backs" of ore when the ore bodies are reached, the improvement of a fine water power of, perhaps, 1000 h.p., and the supplying of light, ventilation, drainage,

power and transportation to all the mines of the immediate locality.

Fairly complete surveys of the interested properties were available, and but little of this work was necessary to determine the best point from which to start. Accessibility to the railway and the concentrating mill of the Portland Canal Mining Company and its power plant, were the governing factors in this location, rather than the distance to or depth on the zone. It was found that a tunnel of an estimated length of 2,300 feet would enter the apparently main vein of the Fissure Zone at a depth, on the dip of the vein, of 620 feet below the surface working of the Portland Canal Mine, known as the Richard Cut, for which working the tunnel is almost exactly headed. These figures are based upon an assumed westerly dip for the vein of 45 degrees, which is approximately correct. When the vein is reached by the tunnel, drifting north or south on it, or both, or further cross-cutting through the zone to the other veins must be decided upon, and this decision will be largely influenced by the disclosed conditions.

Contracts for drainage, transportation and other purposes have been entered into between this Company and the Portland Canal Mining Company, Ltd., the Stewart Mining and Development Company, Ltd., the Glacier Creek Mining Company, Ltd., and the owners of the O. K. Fraction, and A. and B. mining claims. These contracts run for a term of 21 years, and, while entirely fair to the mining companies, assure the tunnel company an excellent income when merchantable ore bodies are developed. In addition to these contracts, leases have been secured on the surface rights of the Riverside mining claim, upon which the tunnel is located, and upon the buildings, plant and equipment of the Portland Canal Mining Company.

The Portland Canal Tunnels, Ltd., has purchased, at a very reasonable price, Melba, Olga, Kootenay and Little Pearl Fractional mining claims, and adjoining them Billy, Jane, Helen, Mabel and Jennie claims have been located on vacant ground. These nine form a group adjoining the property of the Portland Canal Mining Company on the west, and will be surveyed and Crown Grant obtained for them as soon as the season will permit. Their value lies in the fact that the zone will dip into them after passing beneath the west sideline of the Portland Canal Mining Company's property.

Preliminary work on the tunnel began last September (1912), and consisted of the necessary surveying, the building of a short piece of road, clearing the tunnel site, and putting up a blacksmith shop, powder house and thawer. The mill boarding house of the Portland Canal Mining Company was somewhat enlarged

to accommodate the necessary men. Early in October the actual digging began and the portal set of timbers for the tunnel was placed on October 23rd, 42 feet beyond where the ground was first broken. On October 26th two shifts of men were employed, and have been since continued. From the time of starting until about January 1st, 1913, wash and gravel with an occasional boulder were passed through. The work in this ground was slow, dangerous, and expensive, and very heavy timbering was necessary throughout. On November 1st, Mr. L. C. White wrote as follows: "As I wrote before, we have to drive spiling top and sides, also use breast boards and false set. The ground runs like wheat and every crack must be stopped. I had to cut longer lagging, 9 feet. The ground is also full of boulders, weighing two or three tons. When we get these but it usually starts the ground running." That no one was hurt and not a single set of timbers lost during this part of the work speaks well for both the superintendent and the men. On January 1st the face was in solid rock, and from then on no timbering has been needed. Two shifts of men are employed running two Sargent-Ingersoll 3 1-4 inch rock drills, and about 20 men are on the payroll, including the superintendent. During the month of January 209 feet of progress was made; during February 205 feet, and in March 226 feet, making the face of the tunnel on April 1st 823 feet from the starting point. The 1000 foot mark will be comfortably passed this month, and the present rate of progress will be maintained and possibly bettered. Assuming its calculated position to be correct, and barring unforeseen contingencies, the vein will be reached about November 1st, 1913. It is too early to figure costs, but at this time the tunnel driving is costing about \$20.00 per foot, and it looks as though the entire working would not cost more than the original estimate of \$25.00 per foot. In fact, it should come well within it.

The size of the tunnel is 7 ft. 6 in. by 8 ft. in the clear, with a single track of 20 lb. steel rails, and a 10 in. in diameter ventilating exhaust pipe carried in the roof. The ditch, for drainage purposes, is taken up about 18 in. deep as the work progresses. Power is supplied by compressed air through a 4 in. pipe; this is supplied by a water driven, cross-compound, 520 cu. ft. capacity Rand air-compressor at the mill of the Portland Canal Mining Company.

The tunnel is now in "greenstone," the Bear River Formation of the Dominion Geological Survey. The Fissure Zone is in the "argillites," or Bitter Creek Formation, and the contact between these formations, which the tunnel should cut between 1500 and 2000 feet in, may be looked for with interest. It is in the neighborhood of this contact that many ore deposits have been found. A

number of quartz veinlets, all sparingly mineralized with pyrite, chalcopryite, and perhaps pyrrhotite, have been cut, but they are of no commercial value; they all roughly coincide both in dip and strike with the Fissure Zone and the veins in it. When the argillites are entered by the tunnel it is not improbable that veins unknown on the surface will be encountered; whether these, if found, will carry valuable ores is purely problematical.

It may not be improper, at this time, for me to express an opinion in answer to the question which is most pertinent to the conduct of this enterprise:—With the tunnel in and the veins explored, will paying mines result?

I have known the Portland Canal Fissure Zone for the past five years and for the past three years have been in intimate touch with practically all the mining operations thereon. From my first visit to the district until now I have believed that large deposits of substantial economic value existed there. Nothing that has transpired has shaken my belief that these ore deposits can and will be worked at profit and ultimately become large producers with long life. Further, I believe that the means at present employed are the proper ones for their development and operation, and that the expenditure being now incurred is fully warranted by the showings already made on the several veins.

Finally, to show that I am not alone in the opinions expressed, I will quote from a letter written by one of the men most heavily interested in this enterprise. He says: "I only became interested in the Tunnel project for the opening up of the various mining properties near Portland Canal after satisfying myself by the most careful investigation that the undertaking was one of undoubted merit and was laid out on the basis of correct engineering and so as to afford economical shipping facilities to the largest possible number of mining properties."

Yours truly,
W. J. ELMENDORF,
Manager.

PROGRESS IN ALBERNI DISTRICT.

An Alberni, Vancouver Island, despatch of the 23rd inst., says:

Substantial evidence of progress and prosperity all along the line in so far as the resourceful district of Alberni is concerned is presented by Mr. J. G. C. Wood, representative of that constituency in the provincial legislature, who has just returned from a short tour through the better known portion of his riding. This section extends from Departure Bay and Wellington through to the rival cities of Alberni and Port Alberni, while the northern arm of the constituency reaches as far Pole-ward as the Island itself extends.

It is Mr. Wood's intention to visit every settlement and portion of this long seaboard section in the near future, his companions being the deputy minister of public works, Mr. W. W. Foster, and District Road Superintendent Harry Lee, in order to ascertain the needs of the various localities and

make provision for them. This trip will be undertaken as soon as Mr. Foster can make the time for it, but meanwhile it is expected that Alberni will have the pleasure of receiving as a visitor the minister of education and provincial secretary, Hon. Dr. Young having promised to open the new West Coast General Hospital shortly after he returns from the North, inspecting en route the various public schools between this city and Port Alberni.

"As you doubtless know," said Mr. Wood, in regard to his recent trip, "mine is a far-reaching constituency, Departure Bay and Wellington marking its eastern boundary. At the bay the big storm of last December washed out the road completely, and it is now being wholly replaced and made virtually indestructible, with three-foot cribwork and solid filling in. In Wellington more healthy and promising conditions obtain at present than at any time during years past. Many new residents are coming in and are engaged in the development of the rich agricultural territory near the town. It seems to me inevitable that the tramway cheap transportation scheme that is at present obtaining so much consideration in Nanaimo must sooner or later be enlarged to afford connection with Wellington, and this would aid materially in the development of the agricultural resources of the section. The herring industry, too, is in a satisfactory condition, and a greater number of fishermen will be employed this season than before.

"In the new city of Alberni, the mayor and council seem to have taken hold of their responsibilities in a very businesslike way, one of their first official acts having been the taking over of the private waterworks system and the municipilization of this public utility. They are also putting in a fire hall at Alberni. A public park appears to be a desirable possibility of the near future. In this connection, the Alberni Land Company has offered a fifteen-acre site on the flats across the Somass River on the condition that the city put up a bridge giving access to this recreation ground and charming pleasuring spot.

"Our appropriation this season for road and trail work in Alberni district amounts to \$127,000, with \$36,000 for bridges, and Mr. Irvine, the district engineer, is now at work taking the levels for a new River-Bend bridge and also for a new bridge to span Sproat River, both of which structures will be begun immediately. The Sproat River bridge will greatly facilitate access to beautiful Sproat Lake, where many of the residents of the province that have an appreciation for scenic charm are already establishing a colony of handsome summer cottages and more pretentious homes.

"The road will be finished this season to Great Central Lake, and will be travelled by an ever-growing seasonal company of fishermen and admirers of natural beauty. We sincerely hope also for an early location and construction of a direct road from the Albernis giving access to Strathcona Park, and for the completion of surveys so that

the building may proceed of the great Canadian Highway from Alberni via Sproat Lake on to Long Beach."

LE ROI NO. 2 IN GOOD SHAPE.

The Rossland Miner of the 26th ult., says:

The statement of the Le Roi No. 2, Ltd., for the year ending September 30, 1912, has arrived and is in the hands of local shareholders. The profit and loss account shows only a profit of \$15,000 for the year under consideration. During the year 40,112 tons of ore were mined, of which 18,257 tons were shipped to the smelter, the average value per ton being \$20.10, against 27,098 tons of an average value of \$21.08 shipped during the previous year. 1,658 tons of concentrates were produced, averaging \$25.75 per ton from 17,116 tons of low grade ore. Mining costs work out at \$3.46 per ton, and smelting cost charges at \$5.77, making a total, after allowing for development and depreciation, of \$12.18 per ton, as against \$11.41 per ton in 1911.

The even and systematic working of the mine was much hampered during the year by the serious question which arose between the Le Roi Two and the Consolidated Mining & Smelting Co., of Canada, as to the ownership of certain ore bodies found and worked by the Le Roi 2 in their boundaries which they claimed were their property under the extralateral right law, which was in force when the claims were originally staked. The existence of extralateral rights where parties come into conflict are apt to lead to most costly litigation, and, with the object of avoiding this, it was decided that a director should visit Rossland and endeavor to effect a settlement. The Board is pleased to report that F. C. D. Haggard, who was appointed for the purpose, was successful in coming to an agreement satisfactory to all concerned. Under this arrangement the boundaries between our property and that of the Consolidated Co. were adjusted, extralateral rights abolished, and all claims for damage or trespass waived. In exchange for certain portions of the Josie and No. 1 claims, the Le Roi 2 became the owner of the Monita claim.

Two dividends were paid during the fiscal year of \$30,000 each.

In turning from the profit and loss account to the balance sheet, a most satisfactory state of affairs is found. The value of the ore in stopes and in transit and concentrates on hand, \$45,000; the stock held by the company in the Van Roi, at a reasonable valuation, taking into consideration the market price, \$120,000; the amount owed by the Van Roi to the Le Roi No. 2 on September 30, over \$30,000; sundry debts owed to the company, \$13,000; amounts invested in C. P. R. 4 per cent. debenture stock and in Union Pacific railway 4 per cent. prior lien bonds, \$100,000; cash on hand, \$26,000. The total of the asset is \$334,000. As the shares of the company are selling at \$2.50 each, and as there are 120,000 shares, that would make the value of

the entire property \$280,000. It can, therefore, readily be seen that the cash assets alone would more than redeem the shares at the existing price. This does not take into account the office furniture, mine machinery and plant, nor does it take into account the mining property. It is apparent from the above that the Le Roi No. 2 is at present financially in a strong position.

REPORTED FIND OF PLACER GOLD.

Information concerning reported finds of placer-gold on creeks south of Teslin lake, in Atlin mining division, have been attracting some attention, though as yet particulars are meagre. Most published accounts lack definite details as to whether or not gold has been obtained in any quantity above a few dollars' worth, but one press despatch from Skagway, Alaska, dated March 22, stated that one man had arrived in Atlin "with several thousand dollars' worth of washed gold, the first brought out from the scene of the new strike."

A communication from Mr. W. Scott Simpson, Indian agent in the Stikine River district, which lies south of Atlin mining division, dated March 2, and addressed to Mr. A. M. Tyson, inspector of Indian agencies for Northern British Columbia, has been published. It is to the effect that at present there are but few of the older Indians on the reserve at Tahitan village, the majority of the men being now in the vicinity of Silver creek, a tributary of Teslin river, which joins that river about 35 miles south of Teslin lake, into which latter the river flows. Mr. Simpson reported that on February 5 a deputation of Indians, waited on him and produced a letter which had been sent to them by Atlin Indians, stating that they had found new placer diggings on Silver creek. The Indians requested him to accompany them on a claim-staking expedition, and to see that their record papers and lay-over permits were properly made out. Thinking it might lead to the ultimate prosperity of the Indians, he accompanied the party, which on February 7 left Telegraph creek, a settlement on the Stikine river, and on March 2 returned to that place, after having staked claims on three creeks. The Atlin Indians produced an ounce and a half of gold they had got there last fall. They had obtained free miners' certificates and staked claims last November on the best-looking parts of the creeks. Various Indian tribes have staked claims to an estimated number of about 300, and white men also have about that many. Under existing conditions of snow and frozen ground, it is difficult to say whether or not the new diggings will prove payable to any considerable number of miners; it is probable many of the claims will prove hard to work.

Three routes to the new field have been mentioned in newspaper notices: One is via Whitehorse (in Southern Yukon Territory) up the Hootallinqua river to Teslin lake, and then down the lake to its southern end, which is about 35 miles from the locality of the new find. Another is via Skagway to Carcross (Caribou Crossing) by railway, thence to Atlin and from that camp by trail east to the creeks under notice.

The third is by Wrangel (in South-eastern Alaska) and Stikine river to Telegraph creek, and thence by trail.

Hon. Dr. H. E. Young, Provincial Secretary, who late in March returned to Victoria from a visit to Atlin, after having made many inquiries, has concluded that the best way will be for the Government to open a trail from O'Donnell river, in Atlin camp (on which river new placer-gold finds were made late last autumn), to the new diggings which, he was informed, can be reached in 90 miles from Atlin. He sent in a party of men by the longer old trail and instructed them to return by the proposed shorter route to Atlin, via O'Donnell river. On receipt of their report, he will, if it be favorable, recommend to the Government to at once proceed to open the proposed new trail.

Information received later by newspapers from Nahlin, a station on the telegraph line, through Northern British Columbia to Yukon Territory, was as follows: "Two men who came down the trail from Silver creek report that J. Fuller, owner of No. 2, below Discovery on Silver creek, had reached bedrock after having passed through five feet of gravel. He took out coarse gold to the value of 75 cents a pan, which is regarded as good pay. Prospects on other creeks appeared to be favorable, but bedrock had not been reached on those. There was a small town of tents on Johnson creek, and other creek benches were being dotted by the tents of new arrivals." Nahlin is about 30 miles from Silver Creek.

Still another published report is that Robert McKee, well-known in Atlin camp, has been in Seattle with about \$400 in Silver Creek gold. Among other statements made public is one that the reported finding of new diggings is only a scheme to enable Indians in the district to profit by selling placer claims they have staked. This may not be true in all cases, but it is known in Victoria that a number of claims held by Indians are for sale.

Remembering, too, the customary exaggeration on the part of those interested chiefly in inducing men to spend money in travelling and outfitting, whether or not there be a fair prospect of the new diggings proving sufficiently productive to warrant the outlay necessary to reach the locality, it would appear to be well for those intending to go to the Silver Creek country to await publication of authentic information from known reliable sources before undertaking what might otherwise prove a profitless journey.

COPPER RIVER COAL FIELDS APPEAR TO BE PROMISING.

A Prince Rupert despatch of the 27th inst., says:

Mr. Amos Godfrey has returned to Telkwa from the Copper River coal fields, and reports five seams of coal discovered on the property, upon which there has been nearly 1500 feet of tunnel work done. The largest of these seams shows eight feet of good, clean coal, and when Mr. Godfrey took measurements to get an idea of the tonnage, these figures showed there to be 12,440 tons

to the acre, or 7,961,600 tons to the section, and allowing for the dip which the seam makes at the present depth, these figures would be doubled, giving the enormous tonnage of 15,923,200 tons to the section, and from careful prospecting, this seam is known to underlie ten sections. Above this large deposit is another good, workable seam five feet in width, which adds greatly to the estimated tonnage.

Mr. Godfrey has had a great deal of experience in coal mining both in British Columbia and the Old Country, and he says he has never seen better coal for coking purposes, or which could be mined more easily than these two seams.

BAKER GROUP MINES BEING DEVELOPED.

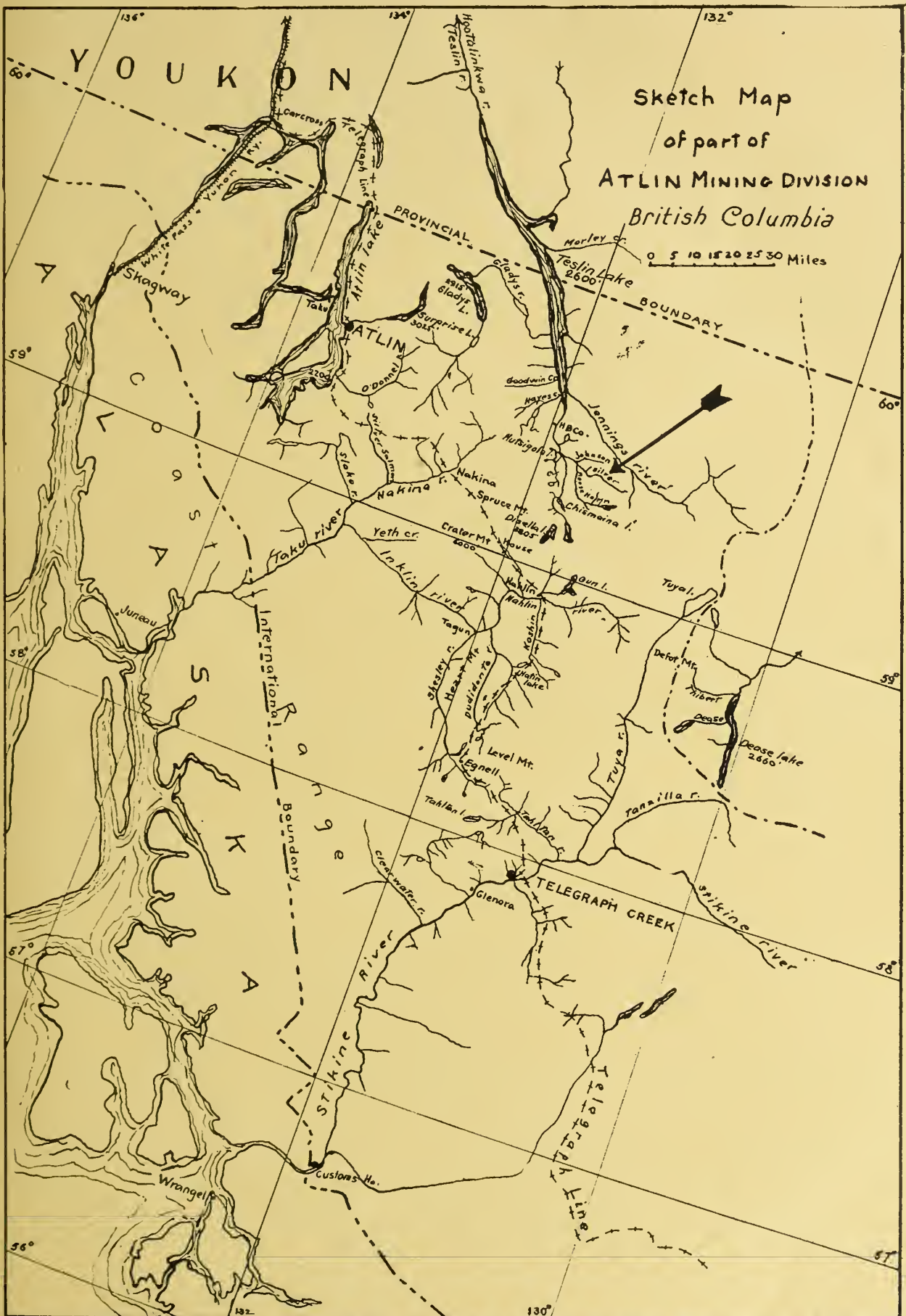
A Chilliwack despatch of the 18th, says:

Mr. J. Post, one of the oldest prospectors in this district, was in the city a few days last week, arranging for supplies to be taken to some new prospects he has been developing on the Silicia Creek, which he is confident will turn out to be something exceptionally good. The prospects are in the vicinity of the Lone Jack, which is well known to the miners and prospectors here. Mr. Post reports much activity amongst the miners in the Mount Baker region. Judge Scott of Seattle, has a splendid prospect, which he has been developing and there is a large quantity of ore on the dump awaiting the erection of the separating mill. The machinery for this mill is now in Chilliwack ready to be packed to the mines. Parts have already been packed there and in a short time the mill will be set in operation. Mr. Scott's prospect is a free milling one, and the milling of the ore will be done by what is known among the miners as the American process. This is a machine with a series of rollers within a cylinder. It is a vast improvement over the old stamp mill, not only in the eradication of the noise, but in a more thorough separation of the ores.

The Scott property is directly across the international boundary line on the Washington side, but the machinery and supplies have to be packed in from this side, the Mount Baker trail being the only accessible means to get to the property. The provincial government has signified its intention of improving this route just as soon as the prospects in the Baker region warrant the outlay of the expenditure. That time has now come, and in a few weeks Mr. A. Cruickshank will have instructions to expend about \$12,000 on this road. This improvement will tend to stimulate largely mining and prospecting in that section of the Chilliwack River and Lake.

Machinery has been installed in the Silver Standard near Hazelton.

The crosscut in the 100-ft. level of the Silver Hoard is proving up to expectation. Some very fine ore has been struck.



SKETCH MAP SHOWING LOCATION OF REPORTED FIND OF PLACER GOLD.



The people who are making money in Western Canada today are those who keep a sharp look-out for the "shadows" that presage great events. It is a remarkably easy matter if only you have good common sense and faith in the future.

The "shadows" that harbor enormous development in the North Pacific section of Western Canada are as plain as the clouds in the sky. They are even plainer now than they were three years ago when Prince Rupert, the hustling, fast growing terminus of the Grand Trunk Pacific was first offered to investors. A few hundreds dollars bought a lot in Rupert in those days. Today it takes a good many thousands to buy the same lots, and the first owners are driving motor cars as a result. You can make just as good an investment today; you have the very same opportunity based on the same conditions, in Port Edward, B. C.

This advertisement only points to you the fact that you should know more about this great North Pacific country. It cannot convince you that you should invest. We don't expect or want it to. We want you to investigate, inquire, learn all the facts you can. We'll help you in every way possible.

PORT EDWARD, B.C. --- Prince Rupert's Industrial Annex

Is simply an addition to Prince Rupert, owned by the Port Edward Townsite Co., Ltd., which comprises some of the foremost business and professional men in Canada, and which is capitalized at \$1,000,000, all subscribed. But think what such an annex to Prince Rupert means! Prince Rupert, Pacific terminus of what will be perhaps Canada's greatest trans-continental railroad, is nearer than any other North American port to the great Oriental markets; it is the natural distributing point for the richest area of natural resources on the continent; it is the market place for the great North, the Yukon and Alaska. Prince Rupert cannot accommodate the industries that are seeking locations in this wonderful field. That is a fact well known. Port Edward, adjacent to Prince Rupert but situated on the mainland and on the main line of the G. T. P., has the harbor and the pier wharf room and the town-site to fill the bill completely. Development work is now under way. Industries have already begun locating there; others are planning. This is the building time in Port Edward, the time to "get in." Send the coupon now, today for complete information and data—don't postpone it; do it now!

NOTE THE PRICES—\$100 TO \$2,000 PER LOT, ONE-QUARTER CASH

AND BALANCE OVER THREE YEARS.

Manufacturers—Folder "B" is a brief yet valuable compendium of the information about the North Pacific that will interest you. Write for it today!

SEND THIS NOW

Please forward me details about the sale of lots in Port Edward, Prince Rupert's Industrial Annex, with the understanding that this is not to obligate me in any sense.

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HALL & HOYER, VICTORIA B. C.

HARRISON GAMBLE CO.

PRINCE RUPERT, B.C.

JOINT DIRECTING SALES AGENTS

VAN ROI MADE LARGE PROFIT.

The report of the Van Roi Mining Co. for the year ending September 30, 1912, has reached the local shareholders. It shows that the company has had a very successful year, says the Rossland Miner of the 26th inst. The accounts show a balance to the credit of profit and loss of £27,684 10s 11d., after writing of £10,927 18s. 5d. for depreciation on development, machinery, buildings, etc. After further deducting the debit balance brought forward from last year, there remains a profit of £23,711 13s. 5d. The overdrafts at the banks in London and Rossland have been paid off and the loan account had, at the end of the year been reduced to £6,283 19s. 7d.

Work had been confined mainly to the main vein and 4,488 feet of drifting, cross-cutting and raising have been run at an average cost of \$8.91 per foot. 54,115 tons of milling ore have been mined of an average assay of 15.02 oz. silver, 3.66 per cent. lead and 6.26 per cent. zinc, which produced 2,570 tons of lead concentrates, assaying 179.75 oz. silver, 60.2 per cent. lead, and 11.1 per cent. zinc, and 2,570 tons zinc concentrates, assaying 60.8 ounces silver, 3.7 per cent. lead and 45.1 per cent. zinc.

The cost of mining the ore was \$2.58 per ton and the cost of concentrating 95 cents per ton. The former figure is slightly higher than last year, the latter remains unaltered.

THE INLAND COAL & COKE CO.

The Merritt Herald of the 7th inst., says:

Mr. W. Nicol, vice-president of the Inland Coal and Coke Company, spent Thursday and Friday in the valley inspecting the company's mines.

Upon his leaving for the coast on Friday, Mr. Nicol expressed himself as highly gratified with the many improvements which have recently been made and the resultant increased tonnage from the property. With the installation of new machinery, which is expected daily, he is confident that the output will prove a surprise to the people of Merritt as well as the outside world. He was very optimistic about the future of Merritt and expressed himself emphatically on the benefits that would accrue to the city by the operation of the city light and power plant—placing Merritt in the category of an up-to-date and go-ahead community.

PARTICULARS OF PROPOSED PRINCE RUPERT DOCKS.

A Prince Rupert despatch of the 13th inst. says:

Authoritative information is to hand as to the letting of important contracts in connection with the \$3,000,000 G. T. P. drydock, that is in course of construction at Hays Cove. The large amount of work that has so far been done is but a comparatively small part of this gigantic undertaking. Up to the present the laying out and partial

completion of the area to be used for wharves, waterfront, yards, etc., upon which the various buildings, workshops, and power houses will be located is all that has so far been undertaken. This coming summer a start will be made upon the superstructure and before the end of the year there will be a considerable difference in the appearance of the works in progress at Hays Cove.

The contract for all the steel to be used in the construction of this great drydock has been let to the United States Steel Products Co. The Dominion Iron & Steel Co., which was given an opportunity to tender for the supply of steel, was unable to do so on account of the vast amount of work they have already on hand. For this reason the contract had perforce to be given to the American corporation.

The Wineland Building & Engineering Co. of Vancouver has secured the contract for the construction of the re-inforced concrete power house as well as the superstructure of all the buildings.

For a very important feature of the work, the erection of a smoke stack 183 feet in height, the greatest specialists and experts in this line of work have been secured, the Webber Chimney Co. of Chicago. A contract has been let to them, and it is understood that they are already making arrangements to get material on the ground. It is likely this work will be completed before autumn. This firm has completed several contracts in this line in the province already, the work being of the most satisfactory nature.

The directors of the G. T. P. Railway Co. are now calling for tenders for the construction of 12 pontoons for the floating dock, as well as for the building of working floats, shore bridges, etc.

With the letting of all the aforementioned contracts practically everything is arranged for as regards the building and completion of the drydock. All that will be left to be done will be to purchase equipment such as boilers, pumps, electrical fixtures, tools, etc.

GRANBY COMPANY'S OPERATIONS

The Boston Commercial has published the following information concerning the operations of the Granby Consolidated Mining, Smelting, and Power Co., Ltd.:

The Granby Consolidated Company produced 5,539,419 lb. of copper during the first quarter of the current year and made a net profit of about \$194,000. The production by months compares as follows:

	Copper Lb.	Silver Oz.	Gold Oz.
January	1,792,245	23,952	3,430
February	1,779,212	24,645	3,266
March	1,967,962	28,352	4,211

Tls. (3 months) 5,539,419 76,949 10,907

It is understood that the grade of the ore at the Phoenix property improved somewhat during the past month or two. This has offset to some extent the lower price received for copper and the slightly increased mining costs resulting from interrupted operations in

February, chiefly due to the inclement weather.

The March run of the smeltery was a record breaker with a full battery of eight furnaces operating for 31 days as compared with a 20-day run in the preceding month.

Construction work at the Hidden Creek property is well under way, with foundations being laid for the various buildings.

Mr. William H. Nichols, president of the Granby Company, issues the following report to the stockholders:

"Since the last quarterly report, January 22, 1913, the forward policy of the company recommended by the directors has been adopted by the shareholders and the company is in position to avail itself of any opportunities which conservative judgment may dictate and at the same time to push to completion the work already undertaken, and resume payment of a moderate dividend out of the profits from current operations.

"At Anyox the work laid out has steadily progressed without any disappointments, although some construction work was somewhat hampered by the winter snows which have been quite unusual for that region. Our engineers, however, still expect to have the works in condition to operate in November and December of this year.

"The operations of the Phoenix mines and Grand Forks smeltery for the month of March showed a profit of \$87,770 and for the nine expired months of the fiscal year, to March 31, \$990,255. The yield of metals has been fully maintained, and the cost of copper for March slightly reduced but current profits for a portion of this period were interfered with by the decline in the price of copper. All figures are now based on copper at 14 1-2 cents, and on March 31 we had on hand 1935 tons taken at that price.

"Reports from the development work of the old properties indicate that ore reserves there have been fully maintained."

GRAND TRUNK CONSTRUCTION EAST OF HAZELTON.

A Fort George despatch of the 15th inst. says:

A comprehensive account of railroad construction progress on the western end of the Grand Trunk Pacific line is brought by Mr. Charles Johnson, a miner, who arrived here recently. Johnson left Prince Rupert on February 15.

He states that trains are running on schedule between Prince Rupert and New Hazelton, while steel has been laid as far as Porphyry Creek, 17 1-2 miles this side of Hazelton. Grading is completed as far as Telkwa, which is about 60 miles east of Hazelton.

According to Johnson, Mr. John Boston is the only contractor on the stretch from Fort George to Fort Fraser who has as yet started grading operations. He has a strip of 14 miles at Fort Fraser. From that point to Burns Lake, 45 miles, no grading has been undertaken as yet.

At Burns Lake, Stewart Bros. & Rankin are working on the grade. Four steam shovels are moving dirt at this point, where there is some fairly heavy grading to be done. Mr. Bostom's steam shovel is at the present time being moved down from Telkwa to Fort Fraser.

From the east end of Burn's Lake, towards Fort George, gangs are now working on the telephone line that is to connect up the various camps.

Messrs. Duncan Ross, M. Sheady, M. McHugh, Norman and Hugh McLeod, Freeburg & Stone, and Pagett are all working on contracts to the west of Burns Lake, which will not be completed before the spring. All of these, with the exception of Mr. Pagett, have contracts between Fort George and Fort Fraser. Mr. Pagett has enough work on his present contract to keep him busy all summer, but the others are preparing to move eastward as soon as possible.

Camp supplies are plentiful with the exception of horse feed, Mr. Johnson states. Feed is very high, and at the present time hay and oats are being freighted to the camps from Fort Fraser. About 100 four-horse teams are now engaged hauling food along the ice road, along Fraser Lake, the Endako River and Burns Lake to the camps. These teams are owned by Foley, Welch & Stewart.

Mr. Johnson came through a part of the way from Hazelton with Mr. J. W. Stewart and party, who arrived here a day or two ago. Mr. J. L. Retallick accompanied Mr. Stewart, who is making the trip to look up mining prospects.

MICA IN BRITISH COLUMBIA.

The following is an excerpt from a paper on "Mica Mining in Canada," by Mr. Hugh S. de Schmid, Ottawa, Ontario, presented at the annual meeting of the Canadian Mining Institute, held in Ottawa March 5-7.

"What may possibly prove to be extensive and valuable deposits of muscovite have lately been engaging the attention of mining men in Western Canada. These deposits are situated in the neighborhood, more or less, of the Yellowhead Pass, and have been known for a number of years. Mr. Jas. McEvoy, of the Geological Survey of Canada, reported a force of 12 men at work upon an occurrence of muscovite, a considerable distance to the north of Donald, in 1895. The mine lay about 150 miles from the nearest railway, and the mica, as well as supplies, had to be transported by means of packhorses. Mica outcrops are said to be plentiful in this district; and samples of sheats from various localities, though taken in most cases from near the surface, are of fair quality and size. South of the Yellowhead Pass district, on Mica and Yellow creeks, which lie a few miles south of the Big Bend of the Columbia river, promising outcrops of mica have been found, and samples sent to the Mines Branch of the Canada Department of Mines were as good as much of the marketable mineral originating from mines in the East.

"With the advent of the Grand Trunk and Canadian Northern railways, which will traverse the Yellowhead Pass, communication with the mica-bearing districts will be provided, and a thorough prospecting of the area and a testing of the economic value of the deposits may be expected in the near future. Already the numerous samples of British Columbia mica submitted to the Mines Branch, and the frequent enquiries received regarding mica and its properties and value, indicate that an active interest is being taken in the possibilities of this hitherto practically unexploited mica-field. It is to be hoped that more success will attend the operations of mica-miners in the West than has been experienced by a majority of 'white' mica operators in the East."

GOOD PROSPECTS FOR NEW LEAD-VILLE

The "West Yale Review" of the 15th inst. says:

It is reported from Spokane that the syndicate of that city that took an option on the Sky-Line group of mines in Summit Camp—since called New Leadville—has met with very favorable results.

The option was taken last August from the owners who reside in Terre Haute, Indiana. Development work was continued with a slightly increased force, and it is now reported that a vein of silver lead ore, 27 ft. wide, and of paying value, has been cut. It is also reported that the ore body has already been proved to be very extensive.

The camp is almost equidistant from Hope, Merritt and Princeton, but both present and prospective transportation facilities are all in favor of Hope as the base of supplies and port of shipment, and Hope is much nearer to Vancouver than either Merritt or Princeton is to any other large city from which supplies and equipment could be brought.

It is also announced, presumably with the owners' authority, that they intend to go ahead with mining work on a large scale so that they will have a large tonnage waiting for the first branch that connects them with any railway system that will give access to smelters.

The name of "Patsy" Clark, of Spokane, is mentioned in connection with the enterprise. Mr. Clark is one of the most cautious and most successful mining operators in the North-West, and if it be true that he is associated with it there need be no doubt that the mineral has been found.

On October 19th last "The Review" published an historical sketch of Summit Camp from data furnished by a gentleman of Terre Haute, who was one of the first to spend any money for development.

Apart from the Sky-Line group there are four or five other properties on which considerable money has been spent and with promising results. The prospect of early transportation cannot fail to stimulate activity in these and give New Leadville immediate standing as a mining camp.

SHIPBUILDING INDUSTRY FOR CANADA.

A strong plea for the establishment of the shipbuilding industry of Canada is made in the annual number of The Monetary Times, by Mr. J. J. Shallcross, of Victoria, Canada. He says:—"Canada is passing through an era of prosperity stimulated by a large movement of capital and labor from Europe, and although there is no sign, at present, of any reaction, it is obvious that every such movement must, at some stage, reach its maximum, and that a reaction of a more or less serious character is likely to follow. It is in the time of prosperity that efforts should be made so to broaden the field of industrial employment that the effects of a reaction may be minimized, especially in respect to labor and the rate of wages. Bonuses are not unknown in Canada, as witness those given to lead and iron, and it is certainly of importance to Canada, with a seaboard on three oceans, that she should occupy a worthy place as a shipbuilding nation. If a bonus is to be given to shipbuilding, it should be both specific and ad valorem, so as to encourage the construction of vessels of the highest class, requiring expensive machinery and highly skilled labor."

A REMARKABLE MEETING IN BRITISH COLUMBIA.

Writing of United States investments in Canada, in the annual number of The Monetary Times, Mr. A. Barton Hepburn, of the Chase National Bank, New York, tells of a remarkable coincidence. In March, 1911, Lord Desborough, president of the London Chamber of Commerce, gave Mr. Hepburn, president of the New York Chamber of Commerce, a luncheon at the Savoy Hotel. About seventy-five miles north of Ashcroft, on his automobile journey last fall, his automobile swung out from the main road to a precipice, in order to afford a view of valley and mountain, of wonderful beauty and grandeur.

"I found three other cars just ahead of me," continues Mr. Hepburn, "and recognized and greeted Lord Desborough as one of the party enjoying the view with Lord Beresford, whom I had met many times in New York, and the Duke of Sutherland, to whom I was introduced. Truly a remarkable coincidence, my second meeting with Lord Desborough. It is a far cry from the Savoy Hotel in London, to a log cabin roadhouse along the British Columbia express route, where we took our luncheon. These gentlemen were en route to Fort George, looking for real estate investments. This shows not only by the confidence these important gentlemen had in the future of the Dominion, but it also shows, in the opinion of some, a disposition on the part of English landholders to reduce their holdings of real estate in England and Scotland and increase the same in the Dominion of Canada. Whether Lloyd George's scheme of taxation has anything to do with inducing the change of investments like the above, it remains that their judgment in seeking Canadian investments is eminently wise and justified by every consideration of business prudence."

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CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing over Lot 1340, Range 1, Coast District, by reason of the notice published in the British Columbia Gazette of the 27th of December, 1907, is cancelled, for the purpose of permitting the Davidson-Ward Company, Limited, to purchase the said lot.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B. C.,
19th December, 1912.



NOTICE OF CANCELLATION.

Notice is hereby given that the reserve existing on the east half of Lot 454, Sayward District, formerly covered by Timber License No. 38427 expired, is cancelled, and the lands will be open to pre-emption at the hour of 9 a.m. on Thursday, the 29th day of May, 1913.

R. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B.C.
February 10, 1913.



NOTICE OF CANCELLATION.

Notice is hereby given that the reserve existing by reason of the notice in the British Columbia Gazette of the 27th December, 1907, is cancelled in so far as the same relates to the following described land so as to permit of the sale of the timber standing thereon:

Commencing at a point on the shore of Jervis Inlet where the west boundary of Lot 1267 is intersected by said shore; thence northerly 38 chains and 60 links along the west boundary of said Lot 1267 to the northwest corner of said lot; thence easterly along the north boundary of said lot a distance of 8 chains and 63 links to the west boundary of Lot 3005; thence northerly along the west boundary of said Lot 3005 a distance of 27 chains and 63 links to the northwest corner of said lot; thence southerly along the shore to the point of commencement, containing by admeasurement, 117 acres, more or less.

R. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B.C.
January 21, 1913.



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering all vacant Crown Lands situated on Powell Lake and within one mile from the shores thereof, notice of which was published in the British Columbia Gazette on the 18th August, 1910, and dated the 17th August, 1910, is cancelled; and that said lands will be thrown open to pre-emption only on and after the first day of May, 1913.

R. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B.C.
January 21, 1913.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing over Crown lands in New Westminster District, formerly covered by Special Timber Licence 16968, by reason of the notice published in the British Columbia Gazette of the 27th December, 1907, and bearing date of the 24th day of December, 1907, is cancelled in so far as the same relates to the following described parcel of land: 'Commencing at a post planted at the northeast corner of Lot 769, New Westminster District; thence west 17 chains; thence north 40 chains; thence east 40 chains; thence south 13 chains, more or less, to the shore of St. Vincent Bay; thence following the shore-line of St. Vincent Bay to the point of commencement'; and that the said lands will be opened for entry by pre-emption on Wednesday, the 23rd day of July, at 9 o'clock a.m.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B. C., April 14th, 1913.

July 12



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing upon Crown lands in the Cariboo and Cassiar Districts by reason of a notice, bearing date September 12th, 1907, and published in the British Columbia Gazette on September 12th, 1907, as well as the reserve existing upon Crown lands within the Land Recording Districts of Cariboo and Lillooet and the Kamloops Division of Yale Land Record-

ing District by reason of a notice, bearing date April 3rd, 1911, and published in the British Columbia Gazette, on April 6th, 1911, is cancelled in so far as the same affect the acquisition of said lands under the provisions of the "Coal and Petroleum Act."

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B. C., April 14th, 1913.
ap 19

July 12



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing over the lands surveyed as Lot 1603, Group 1, New Westminster District, by reason of a notice published in the British Columbia Gazette of the 27th of December, 1907, and bearing date the 24th day of December, 1907, is cancelled in so far as it relates to the pre-emption of said lands, and that the said lands will be thrown open for pre-emption under the provisions of section 2 of the "Land Act Amendment Act, 1913," on Tuesday, July 22nd, 1913, at 9 o'clock a.m., and that no pre-emption record shall include more than 40 acres; the said lot being divided for pre-emption purposes into quarters of 40 acres each.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B.C., April 14th, 1913.
ap 19

July 12



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve existing over the following parcels of land, situated in Clayoquot District, by reason of the notice published in the British Columbia Gazette of May 23, 1912, and dated May 18, 1912, is cancelled insofar as it relates to pre-emption; and that the said lands will be thrown open to pre-emption under the provisions of Section 2 of the "Land Act Amendment Act, 1913," on the 30th day of June, 1913, at 9 o'clock a.m.; and that no record shall consist of more than one legal subdivision of the said lots, and the maximum area shall not exceed 41.5 acres. Lots 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320 and 1321.

R. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B.C.
March 12, 1913.

At the present rate in another decade the production of British Columbia mines will reach \$100,000,000.



HIS HONOR the Lieutenant-Governor in Council has been pleased to appoint Messrs. H. C. Parson, of Golden; A. M. Harper, of the City of Vancouver; J. A. McKelvie, of the City of Vernon; R. A. Stoney, of the City of New Westminster; and John Jardine, of the City of Victoria, to be Commissioners under the "Public Inquiries Act" to enquire generally into labor conditions in the Province, and particularly the contracts and relations between employers and employes, the hours of labor, the conditions surrounding the employes during their employment, and the time and manner of payment of wages in mines, smelters, canneries, shops, factories, logging and railway construction camps, or in any other work and on tramways; the working and enforcement of the "Truck Act," the "Master and Servant Act," the "Deceived Workman Act," the "Woodman's Lien for Wages Act," and any other legislation affecting labour, the precautions taken for the protection of life, the preservation of the health and the prevention of unsanitary conditions.

The Commissioners will hold their first meeting at the Parliament Buildings on Saturday, the 28th day of December instant, at 10 o'clock in the forenoon, of which all persons interested are hereby to take notice and govern themselves accordingly.

Provincial Secretary's Office,
12th December, 1912.

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Copper Cliff, Ontario.



NOTICE.

Notice is hereby given that meetings of the Provincial Agricultural Commission will be held at the following places:

Saanichton—April 7th, 10 a.m., and 2.30 p.m., Agricultural Hall.

Metchozin—April 8th, 10 a.m., and 2.30 p.m., Agricultural Hall.

Ganges Harbour—April 9th, 2.30 p.m.; April 10, 10 a.m.; Agricultural Hall.

Nanaimo—April 11th, 10 a.m. and 2.30 p.m., City Hall.

Parksville—April 12th, 10 a.m., Agricultural Hall.

Alberni—April 15th, 10 a.m. and 2.30 p.m.; April 16th, 10 a.m., Courthouse.

Courtenay—April 17th and 18th, 10 a.m., and 2.30 p.m. of both days, Agricultural Hall.

Duncan—April 21st and 22nd, 10 a.m. and 2.30 p.m. of both days, Courthouse.

The Commission will hear evidence on all matters affecting agricultural conditions in the Province. All persons interested are invited to be present.

W. H. HAYWARD, M.L.A.,

Chairman.

C. B. Christensen,

Secretary.

mar. 22

ap 19

The majority work too much because they do not understand the science of effective work. Half their movements are unnecessary.

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INDEX

Subject	Page
Twelfth International Geological Congress	5
New Fields of Paraffin Oil.....	9
Hedley Gold Mining Company's Report for 1912.....	11
Annual Report of the B. C. Copper Co., Ltd.	13
Platinum in B. C.....	15
Personal and General.....	16
Reciprocity in Securities.....	19
Editorial	20
Latest Metal Markets.....	21
The Portland Canal Tunnels, Ltd....	22
Progress in Alberni, B. C.....	23
Le Roi No. 2 in Good Shape.....	23
Reported Find of Placer Gold.....	24
Baker Group Mines Being Developed	24
Van Roi Made Large Profit.....	27
Inland Coal and Coke Co.....	27
Proposed Prince Rupert Docks.....	27
Granby Co.'s Operations.....	27
Grand Trunk Construction East of Hazelton	27
Mica in B. C.....	28
Good Prospects for Leadville.....	28
Shipbuilding Industry for Canada....	28
Remarkable Meeting in British Columbia	28
Soldier's Standpoint	33
Timely Warning	34
The Indian Agitation.....	34
Profession and Practice.....	35
A Face Reader.....	35
Pointed	36
Increased Land Value Would Pay Debt	37

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LISTED STOCKS.

Spokane.	Bid.	Asked.
Ajax08½	.17
Alameda00½	.01
Alhambra04½	.10
Ambergris .....	.05	.07½
Am. Comdr .....	.00½	.01½
B. C. Copper	4.25	4.50
Black Horse .....	.01½	.02½
Bullion .....	.01	.02
Bullwhack .....	.48	.52
Caledonia .....	.23½	.26
Canadian Cons.	45.00	75.00
Carbonate Hill .....	.01½	.04
Copper King .....	.02½	.02½
Copper King (Che.) .....	...	.28
Federal, pref.	43.00	51.00
Federal, com.	16.00	23.00
Gertie .....	.05	.06½
Granby Smelter	68.00	70.00
Happy Day .....	.01	...
Hecla	2.20	...
H. E. M. ....	.07½	.09½
Hypotheek .....	.02½	.02½
Idaho Giant .....	.01½	...
Idora Hill .....	.02	.02½
International C. & C. ....	.37	.41
Jack Walte .....	.07½	.08
Laclede .....	.01	.02½
Lucky Calumet .....	.01½	.02
Lucky Jim .....	.13	.17
Marsh .....	.22½	.26½
McGillivray C. & C. ....	.15	.18½
Missoula Copper .....	.02	.02½
Monitor .....	.01½	.02½
Moonlight .....	.04½	...
Nabob .....	.01½	.01½
Nugget Gold Mines .....	.25	.38
Oom Paul .....	.01	.02
Puritan .....	.13½	.19
Rambler-Cariboo .....	.85½	.90
Rambler Cariboo Ext. ....	.04	.05½
Silver Cable .....	.02½	.05½
Snowshoe .....	.01½	.02½
Snowstorm .....	.39	.45
Standard S. L.	1.35	1.47
Stanley .....	.03½	.04
Stewart	1.92	1.97
Tamarack Con.	1.25	...
United Copper .....	.60	1.00
Utica .....	.16	.19½

Industrials

	Bid.	Asked.
Wash. Water Power Co. ..	133.00	136.50
Western Union Life ..	135.00	145.00
Interstate Con. Tel.	20.00	...
Tamarack and Custer ..	1.01	1.26

Cobalt Stocks

	Asked.	Bid.
Balley .....	.09½	.09½
Beaver Consolidated .....	.40½	.39½
Buffalo	2.30	2.10
Chambers-Ferland .....	.29	.28½
Great Northern .....	.09	.09½
City of Cobalt .....	.39	.38½
Conlagas	9.25	9.10
Crown Reserve	3.65	2.58
Foster .....	.11	.09½
Gnifford .....	.06½	.06
Gould .....	.03½	.03½
Green Meehan .....	.01½	.01½
Hargrave .....	.30	.08
Kerr Lake	3.20	3.00
La Rose	2.85	2.72
Little Nipissing .....	.01½	.01½
Mc Kin. Dar. Savage	1.98	1.97
Nipissing	9.15	9.00
Ophir .....	...	.04
Otis .....	.02	.01½
Peterson Lake .....	.25½	.25½
Rochester .....	.04½	.04
Right of Way .....	.08½	.08
Silver Leaf .....	.04½	.04
Temiskaming .....	.34	.33½
Trethewey .....	.34	.32½
Wettlaufer .....	.15	.15

Porcupine

	Asked	Bid
Crown Charter .....	.00½	.00½
Dome Extension .....	.06½	.06
Foley O'Brien .....	...	.16
Hollinger	15.50	15.15
Jupiter .....	.37	.36
North Dome .....	.60	...
Pearl Lake .....	.30	.29½
Porc. Imperial .....	.02½	.02
Preston East D.04	.03½
Rea Mines15
Swastika10	.09½
Vipond20	.19½

Sundry

C. G. F. S.05	.04½
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Listed Stocks.

Closing quotations, May 14:

	Bid.	Asked
Alberta Coal & Coke01½
Alberta-Canadian Oil02
American-Canadian Oil .....	.02	.04
Amal. Dev. Co.	3.00	.00½
B. C. Copper Co. ....	...	.02½
Canadian Pacific Oil	60.00	67.00
Granby .....	.02	.03
Glacier Creek .....	.36	.39
International C. & C. ....	...	.02½
International Mining .....	.11	.12½
Kootenay Gold Mines .....	.07½	...
Lucky Jim Zinc .....	.27	.33
Nicola Valley C. & C. ....	...	.02½
Nugget .....	...	.05
Portland Canal Mining .....	...	.70
Red Cliff Min. Co. ....	...	.02½
Rambler Cariboo	1.80	...
Royal Collieries .....	...	1.05
Standard Lead .....	...	...
Vancouver-Nanaimo Coal ..	...	...
Investment Stocks—		
B. C. Per. Loan, A.	138.00	...
B. C. Refining Co. ....	.47	.56
B. C. Trust	102.00	...
Dom. Trust	112.00	120.00
Great West Per., A.	129.50	...
Pacific Loan Co.	27.00	...
Prudential Invest. Co.	106.00	...



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve existing on lands formerly covered by expired Timber License No. 38428 and known as Lot 439, Sayward District, is cancelled, and said Lot will be open to pre-emption at the hour of 9 a.m. on Wednesday, the 7th day of May, 1913.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B.C.

3rd March, 1913



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve existing on lands situated in the vicinity of Slocan River and formerly embraced in Special Timber License No. 31424 expired is cancelled and the lands will be thrown open to pre-emption at the hour of 9 a.m. on Monday, the 9th day of June, 1913.

R. A. RENWICK,

Deputy Minister of Lands.

March 3, 1913.

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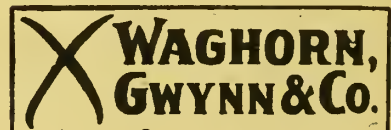
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THE SOLDIER'S STANDPOINT.

Lord Wolseley was less insistent than Lord Roberts of the necessity of strengthening the British Army, and so far as we know was not a public advocate of conscription. But like other military men he held that the Empire could best promote the peace of the world by maintaining military and naval efficiency, says the Vancouver News-Advertiser of the 27th inst. We believe that professional soldiers like Lord Wolseley and Lord Roberts are as much opposed to war as Mr. Carnegie or President Eliot or any semi-professional advocate of peace. These are not the men who say provocative things about other nations. Lord Roberts is

studiously and habitually courteous in his reference to foreign powers. Men of his class do less than most others to produce wars. But when war comes the responsibility rests upon them to conduct it, and that gives them a special interest in the character and condition of the army and navy. No officer who served in the Crimea, like Lord Wolseley, is likely to forget what it means to go into a war without an effective organization. No one who has been obliged to keep the frontiers of India will wish to undertake such a service with inadequate forces. This want of preparation has made wars long that should have been short, and added greatly to the loss of life and amount of suffering. The greatest British soldiers are

friends of peace, but when war comes they expect to take it seriously.

The long Canadian Northern railway tunnel at Yale is nearly finished.

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A COLOSSAL LIAR

Interviewed in Boston the other day, Mr. Bourrassa, gave expression to sentiments that we all know he has possessed for many years and which stamp him as one of the most colossal liars that ever drank pea soup in Canada, remarks the "Phoenix Pioneer" of the 1st inst., under the above heading. If he had confined his remarks to the opinion held by the majority of his French-Canadian confreres little attention would be paid him, but when he stigmatizes the whole resident population of this Dominion as a people groaning under the weight of tyranny he must know he is giving expression to a pack of contemptible lies. Here is what he says:

"The feeling between Canada and England today is much similar to what the feeling was between England and the thirteen colonies in 1775, and it will ultimately end in absolute freedom for Canada."

THE FIERCE TRUTH

The "Hedley Gazette" of the 27th inst. says:

British Columbia suffragettes have found out that the presence of Bab. Wylie in this province didn't do them any good. Whatever chance they may have had of getting the franchise they killed by tying up with that hussy.

A TIMELY WARNING

A London (England) despatch of the 10th inst. says:

Major Lionel James, soldier and war correspondent, who was with the Turkish army up to the time of the armistice, has just published a book on his experiences with the Turkish army which contains a serious warning for England and America. He says:

"Never in the history of war has the danger of employing inefficiently trained and indifferently officered troops been more poignantly demonstrated. There is a trenchant lesson in this pathetic history to all self-confident nations, who, like the British people and the citizens of the United States of America, think that in modern conditions it is positive wickedness to overstrain officers. The machinery of modern warfare will plough through armies thus inefficient with the same irresistible ease as the share of a steam plow turns its furrows."

A force of 20 men is now employed at the Silver Cup at Ferguson. The property will be worked all winter.

At Trout Lake 12 men are working at the Ajax mine. At the Silver Cup near Ferguson 20 men are employed at the present time.

THE INDIAN AGITATION

It is possible the organizers of the "Indian Rights Association" may not be prepared to go as far as the natives in the agitation they have promoted, remarks the "Omenica Miner" of the 22nd inst. At the instance of their alleged friends, the Indians of the Skeena have held several meetings to organize branches of the association. In Kispiox. "The Miner" is informed a recent meeting was attended by 300 Indians, who not only asked for the title to all the land, the abrogation of the Indian Act and full rights of citizenship; but also the withdrawal of all preachers from the Skeena.

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PROFESSION AND PRACTICE.

The Opposition at Ottawa, guided by some of the late ministers, is holding up proceedings in Parliament, because Mr. Borden does not proceed to build ships of war at home before giving aid to the naval defence of the Empire, says the Vancouver News-Advertiser of the 22nd inst. On the other hand, it is pointed out that the Laurier Administration failed to begin construction at home of its own proposed Canadian navy; that it bought from Great Britain two second-hand obsolete craft, which comprised the navy when the Government retired, and that it went abroad to buy fishery cruisers, lighthouse tenders, ice breakers and even dredges and other craft required for ordinary service.

In 1899 the Government had the Minto built at Dundee.

In 1901 the Arctic, an old German boat, was bought and rebuilt for the Government at Kiel.

In 1902 the Druid was built for Canada at Paisley.

In 1902 the Lady Laurier was built at the same place.

In 1904 the Champlain was built at the same place.

In the same year the Montcalm was built at Yoker.

In 1909 the Earl Grey was built at Barrow.

In the same year the Simcoe was built at Wallsend.

One of the largest dredges used by the Government was bought at New Orleans about five years ago.

This list which could be greatly extended, shows how earnest the Laurier Ministry was to encourage shipbuilding at home. One of these craft was purchased by Mr. Pugsley. Other purchases were made by Mr. Brodeur, and all were approved by all the former ministers.

A FACE READER.

A few years ago Dr. J. A. Macdonald, editor of the Toronto "Globe," returned from a press tour in Great Britain and published a description of the British laborer, which stirred up vast indignation, says the Vancouver News-Advertiser of the 25th inst. Dr. Macdonald spoke of the utterly hopeless expression which he saw on the faces of the English crowd, and explained with picturesque detail how he read in their countenances the most utter and chronic despair. His account would have been appropriate if it had described a nation all of whose members had been smitten with some lingering incurable disease and were perpetually considering their doom.

Naturally there was indignant protest when this gloomy story was reprinted in England. Men and women wrote to declare that the English crowd was as cheerful and as hopeful as a crowd anywhere else. It would have been almost dangerous for the editor of the Toronto "Globe" to meet some of the persons whom he thus offended.

But this discouraging experience has not ended Dr. Macdonald's studies of physiognomy. The editor has visited the Canadian House of Commons and noticed the countenances of the Premier and the Minister of Finance. He notes "the look of dejection on their faces." Going more into particulars the student of facial expression says: "Their faces on Saturday night showed something akin to shame bordering on contempt for the impotent recrudescence of Family Compact Toryism in which they are now involved."

This interesting study is quite safe. Neither Mr. Borden nor Mr. White will in the least resent it. They remember how Dr. Macdonald and the "Globe" gloried in the prospective victory of reciprocity and detected the coming humiliation of its opponents. But Dr. Macdonald is not a successful reader of faces. He should try palmistry.

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THE "INTELLIGENT PUBLIC."

This is the age of the quack, the faker and imposter, writes John A. Sleicher in Leslie's Weekly. These succeed because their promises are unlimited. If a man is sick, he wants a doctor who will promise to make him well. If he is poor, he listens eagerly to any one who offers to make him rich. If he is unfortunate, any fortune teller is good enough for him if he will only point the way to a Golconda.

The credulity of the public is amazing. It is still more amazing that it seems to learn little by experience. The dealers in "gold bricks" say that if they once succeed in getting a customer they can usually hold him until they have fleeced him to death. They have only to tell him a new story to divert his attention from his former experience, and then he easily falls a victim again.

With this condition of the public mind is it strange that we have not only quack remedies for our physical ills, but that they are also offered as a cure for all our financial and economic disturbances? This explains the genesis of the anarchist and the Socialist. This accounts for the following of the red flag.

The appeal is made to the poor against the rich, to the unfortunate against the prosperous, to the foolish against the wise, to the ignorant against the educated. If the authority of the church enters its protest, then religion is defied and "Equality and Liberty" is written above the altar, as in the days of the French Revolution.

If the law interposes then the judges must be recalled, laws repealed and constitutions amended. The worst of it all is that many among those who are

the most credulous are sincere, honest-minded persons. They blindly follow the leadership of self-seeking disturbers, in the conscientious belief that they are performing a noble and perhaps a patriotic duty.

THE MOB AND THE MILITARY.

The following excellent bit of plain-speaking is taken from "Irish Life" of the 28th inst., and is worthy of the careful perusal of certain "anti-militarist" bodies on this side of the Atlantic:

"Whatever else he may do during his term of office, Colonel Seeley will ever be gratefully remembered by the present generation of soldiers as the first Secretary of State for War for over a century to increase the line officer's pay. The deed is the more remarkable in that the money has been wrung from a Chancellor of the Exchequer notorious for his prodigality where any Socialist 'reform' is concerned, and for his parsimony over any matter affecting the services. It was very evident that the Labour Members of Parliament were dead against the proposal, and there can be no doubt that their opposition would have taken a more active form had not the promotion of 'rankers' formed an integral part of the scheme. This party has ever been notorious for its hatred of the army, and the reason is not far to seek—in times of grave industrial unrest the army is all that stands between the country and the terrorism of mob law, or, to use a plainer term, political blackmail. Another explanation is the Labour Members' profound ignorance of officers as a class. It was one of their numbers, then a ranting demagogue, now a saner man, and a Cabinet Minister to boot, who described officers as 'gilded popinjays,' to the delight of the great unwashed whom he was addressing. He has the repu-

tation of being an honest man—it would be interesting to hear his honest opinion of officers, now that he has had the opportunity of coming in contact with some of them."

ARISTOCRACY VERSUS DEMOCRACY.

The Daily Telegraph (London, Eng.) in a recent review of a publication dealing with evils which have arisen with the growth of democracy, reminds its readers of the fact—too often forgotten—that the word "aristocracy," which is derived from the Greek, means "government by the best," and concludes, with a courage rare in modern journalism, in the following true and warning words:

"This is not the place to take up an argument so long and complicated, but it will be obvious upon the surface that the finest flower of art and culture has always flourished under an aristocracy, that the very power and science of government is only bred in a race by years of selection, and that the mob has shown, again and again, its ineradicable incapacity to choose its own rulers or to lay down a consistent policy. If the conduct of public life in England is to pass out of the hands of those who have been bred and trained in the traditions of reasonable rule, the next step will be disaster to every class in the community. But the transition would in any case be a slow process, and in the meanwhile democracy may very conceivably shatter itself to pieces against the threatening rocks of anarchy and syndicalism."

POINTED

Says the "Hedley Gazette" of the 26th inst.:

After unmercifully belaboring the peripatetic real estate vendors Colonel Lowery has at last succumbed to the subtle influence for in the last issue of the "Ledge" he announced a land boom shortly in the vicinity of Greenwood. Now is it to be an urban subdivision. Colonel?

Lead bounty earned in 1912 to December 1 has been estimated at about \$65,000, of which amounts for the Standard and Sullivan mines were more than \$20,000 each. Other amounts, varying from about \$7000 down to \$1000, were those earned by the Bluebell, Van-Roi, Emerald Rambler-Cariboo, St. Eugene, Ruth, Monarch, and Molly Gibson. Among others that benefitted a little by bounty payments were the Silver Cup (Ferguson Mines, Ltd.), Whitewater (Retallack & Co.), Utica, Richmond-Eureka, Hewitt Silverton Mines, (Ltd.), Slocan Star, Society Girl, No. 1, Eastmont (Ellis Silver Mining Co.), Arlington, and several still smaller shippers.

It is estimated that from 75,000 to 100,000 people came into the province in 1912, over half of whom were from points outside the Dominion.

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INCREASED LAND VALUE WOULD REPAY DEBT.

An exceptionally interesting story as to Canada's future and the Dominion's borrowings, is contributed to the annual number of The Monetary Times by Sir Edmund Osler, M. P.

"In these days of Canadian prosperity," he says, "the charge has been made that Canada is borrowing too much money, this applying to government, municipal, railroad and corporation loans. It is true that we have borrowed an enormous amount, but if that borrowed money is going to earn the interest that it carries and leaves a surplus profit, then the borrowing is perfectly legitimate, no matter how large the sum may be. No one doubts that the money Canada has borrowed during the past few

years will earn its interest and leave a very large profit in addition.

"Money has been borrowed to develop the natural resources of the country and especially to develop the western provinces. One item alone—the increased value of land in the prairie provinces—would repay very many times over the total amount of money that has been borrowed. The Canadian Pacific Railway has been perhaps the largest borrower; but who can question that the money borrowed is not earning it interest and has, in addition, added largely to the riches of the country?"

"The two greatest needs of Canada today are capital and labor. The Dominion as a whole is somewhat in the position of the western farmer who is trying to develop a section of land with labor and capital sufficient only to look after a quarter section."

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The "Penticton Herald" and "Grand Forks Gazette" each issued interesting and very highly creditable holiday specials in the interests of their respective towns. Both these towns are on the upgrade and making rapid progress and the healthy appearance of the papers reflect the general progress and advance. Sometimes the paper goes ahead of the town and sometimes the town ahead of the paper, but in both of these cases it is an instance of both town and paper keeping step. The advertising patronage accorded to both of them shows that the business men appreciate the influence of a local paper and thereby they show themselves deserving of the efforts which the papers put forth.

The "Vernon News" special holiday number exceeds by far anything that they had formerly issued and that is saying a great deal. It covers not only the city of Vernon but the whole Okanagan in a most complete way and is turned out with the excellence in point of execution for which that paper is noted. Besides the usual 16 pages of the regular issue the special made it up to 96 pages more, and all of it handsomely illustrated with views of the district. The issue was 10,000 copies, which are being disposed of at 25 cents each. Vernon is indeed fortunate in possessing a paper which can keep abreast of the times in the manner the "News" does.

The Silverton Mines, Ltd. property is situated near Silverton. The development of No. 7 tunnel on this group is being continued and is now in about 1,000 feet, and three ore-shoots have been encountered. Raises are being made between Nos. 6, 5, and 4, the distance between these levels being, approximately, 220 feet vertical. The management has been experimenting at the mill with the Elmore vacuum process, and, I understand, is highly pleased with the results.

Development in the Rambler-Cariboo mine in recent years has done much to restore confidence in the mining industry of the Slokan District, and to encourage mine owners to undertake deep-level exploration; since the big adit—which is about seven-eighths of a mile long—was driven about five years ago and the old workings thereby drained, much development work has been done below the 800-foot level, the lowest in the mine prior to the driving of the 1,400-foot level. The downward continuation of the ore-shoot has been demonstrated, and now it has been proven that the highest-grade ore yet found in quantity in the mine occurs on the 1,200-foot level; three ore-shoots have been opened up in the vein on this level. I understand it is the intention of the management to commence the erection of a concentrator somewhere near the new spur of the Canadian Pacific Railway above Three Forks.

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The British Columbia Mining Exchange

AND ENGINEERING NEWS

VOL. XV.

VANCOUVER, B.C., APRIL, 1913.

No. 4

Federal Government to Help Mining Industry

Interesting Address by Mr. M. E. Purcell, at Annual Meeting of Canadian Mining Institute in Ottawa—Premier Borden Promises Co-operation of Dominion Government with Canadian Mining Institute in all Measures for Benefit of Mining Industry—Dominion Department of Mines to Make Ore Tests Free

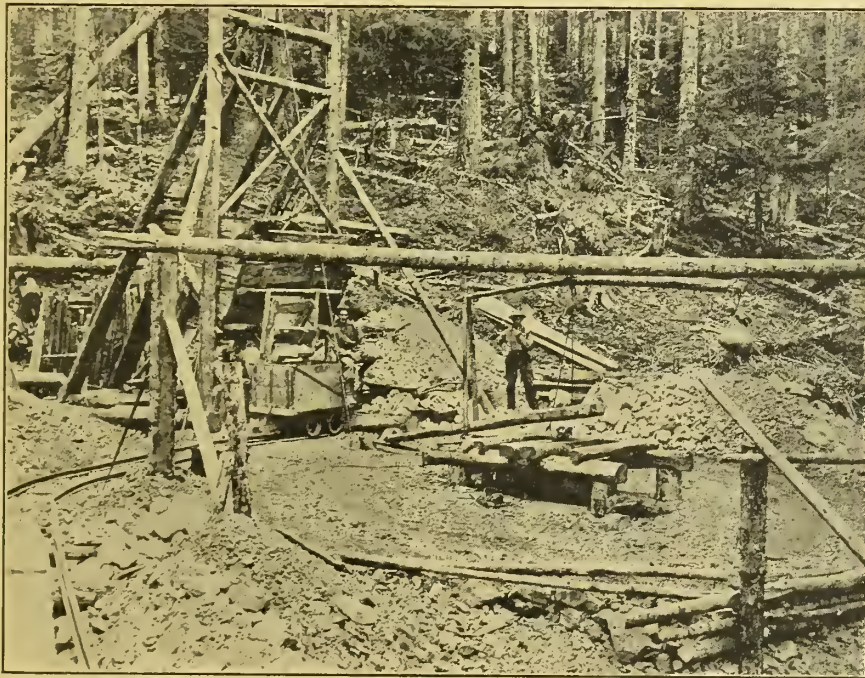
Mr. M. E. Purcell, of Rossland, superintendent of the Consolidated Mining and Smelting Co.'s Centre Star-War Eagle group of mines, attended the Annual Meeting of the Canadian Mining Institute, held in Ottawa in March. At the banquet that closed the proceedings, the name of Mr. Purcell, who is chairman of the Western Branch of the Institute, was coupled with the toast of "Mining." In response, he said, in part:

It is my privilege tonight to represent the Western Branch of the Canadian Mining Institute as the guest, from British Columbia, of the Council of the parent Institute. I take this opportunity to thank the President and Council of the Institute for this honor.

British Columbia is a large province; it extends more than 400 miles from the western boundary of the Province of Alberta to the Pacific ocean, and it stretches away more than 800 miles

achievements are yet to come. Aided increasingly by capital and prosecuted with vigor, economy and skill, mining in British Columbia is steadily forcing its way to the front, there to remain in the position of the foremost industry of the province.

The industry is now firmly established, and year after year will see more and more people engaged in mining, and more and more capital profitably employed in mining enterprises. And why



(Courtesy Natural Resources Security Co., Ltd.)

Shaft of No. 3 Vein, Harris Mines, Hazelton District, whose first ore shipment to the smelter brought a high figure.

Mr. Cahirman, The Right Hon. the Prime Minister, Sir Wilfrid Laurier, and gentlemen of the Canadian Mining Institute:

I wish to thank the gentleman from Nova Scotia (Professor Sexton) for the flattering introduction he has been good enough to give me, and all the other gentlemen present for the kind manner in which they have received my name in connection with this toast.

from the International Boundary to Southern Yukon. It has, during the comparatively brief span of its development, added more than \$430,000,000 from its general mineral resources to the wealth of the world.

Mining in British Columbia, while not so prosperous as it should be, is nevertheless in a healthy and promising condition. But its highest development will be in the future; its greatest

not? Next to agriculture, mining in its various branches is the industry that is nearest to being universally followed by man, and certainly it is the most diversified. Its practice by the different nations of the earth corresponds very nearly to their progress in the arts and sciences. In both ancient and modern times the extent to which a nation has utilized its mineral resources has been found to be the true measure of its wealth, power and enlightenment.

Of such importance has mining been considered that nations have made it the subject of special legislation designed for its regulation, protection and substantial encouragement. To this end has it been the custom to concede to miners certain privileges and franchises, such as water rights, the right to cut timber on public lands, etc. Even taxes on them have been either reduced or remitted.

The miner receives valuable assistance from the Federal Government through the work of the Geological Survey and Mines branches of the Department of Mines. The field and other investigations made by men trained specially in geological and mineralogical sciences are of great benefit to the mining industry. They are also of much service to the prospector in his search for the precious metals and other minerals. And it is fitting they should be for every encouragement and assistance should be given to the prospector, who is in fact and deed a pioneer—the avant courier of civilization.

Men are now mining for gold, silver and copper in South America, Mexico, Russia, India, Africa, and other countries, just as men mined for those metals ages ago, and as they will continue to do during ages yet to come. While the tillers of the soil in the mountains are immediately dependent on the miners for a market for their products as well as for their subsistence, it is also a fact that the entire country is benefitted by the mining industry. There is not in this broad Dominion of Canada a class, interest, nor vocation but what benefits, either directly or indirectly, by the labor of the miner, and while the miner aids every other craft and calling he enters into competition with none.

I was greatly pleased to hear the Right Hon. the Prime Minister say this evening that his Government will be ready to co-operate with the Canadian Mining Institute in all reasonable measures having for their object the advancement of the best interests of the mining industry, and to hear, too, the distinguished Leader of the Opposition say that he is entirely in accord with such a policy of encouragement to that industry. When I shall return to British Columbia shortly it will give me much pleasure to deliver to those of our people who are engaged in mining as a message to them these favorable sentiments. I will tell them what I have heard here tonight—that they may depend upon the Federal Government to aid them in every reasonable way in developing the mineral resources of the country, and this assurance will cheer them in their work and encourage them to still greater effort than in the past.

Mr. Chairman and gentleman, again I thank you, both on behalf of the Western Branch of the Canadian Mining Institute and for myself, personally.

A salt bed has been discovered 45 miles from Prince Rupert. The salt is of the best quality, and lies from 50 to 250 feet below the surface. At present most of the salt used in British Columbia comes from California

DOMINION DEPARTMENT OF MINES WILL MAKE TESTS FREE.

The Mines Branch of the Department of Mines has installed at Ottawa a modern well equipped laboratory for purposes of experimental concentration and metallurgical tests with Canadian ores and minerals.

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Standard Size Machinery

Crushing and screening:—

One Hadfield & Jenks 12 by 18 in. Blake crusher; one pair Allis-Chalmers 24 by 14 in. "Style C" rolls; one Hardinge 4 ft. 6 in. conical ball mill; one Ferraris 6 ft. screen for coarse sizing; one Keedy ore sizer, No. 3, for fine sizing; one duplex Callow screen.

Sampling, recording, etc.

Sampling is provided for by two standard Vezin machines, placed in favorable position to cut out preliminary samples of coarse materials. The fine material will be sampled by an eight unit system of the Flood automatic samplers. Provision has also been made for hand-sampling by means of the Jones riffled samplers. All water lines serving standard apparatus will be equipped with Keystone water meters, to enable the keeping of accurate records of water consumption.

Amalgamation and concentration:—

One Allis-Chalmers five-stamp battery, with 1250-lb. stamps, equipped with a 10-ft. tilting amalgamating table, followed by a Pierce amalgamator. The mortar of this mill may be, if so desired, arranged for inside amalgamation; six Callow tanks, 8-ft. diameter, for de-sliming and settling; two Richards pulsator classifiers, launder type; one Overstrom sand table; one Deister slime table; one Richards pulsator; two-compartment jig; one tandem unit Grondal magnetic separator, for wet separation of strongly magnetic minerals; one Grondal magnetic cobber, with dust collector for dry separation of strongly magnetic minerals; one Ullrich four pole magnetic separator, for either dry or wet separation of weakly magnetic minerals; one Huff electrostatic unit, comprising a standard generator and two laboratory size separators.

Small scale apparatus:—

One Sturtevant 2 by 6 in. laboratory crusher; one Sturtevant 8 by 5 in. laboratory rolls; one Sturtevant 12 by 24 in. laboratory screen; one Braun planitary pulverizer; one Abbe six jar pebble mill; one gyratory screen (Hoover type), for making dry screen analyses with nested screens; one Richards combined laboratory pulsator jig and classifier, with glass side; one Grondal laboratory magnetic separator, for either dry or wet separation of strongly magnetic minerals; one Wilfley table, 24 in., laboratory size; one laboratory cyanide plant of 200 lb. capacity, consisting of a Parrel agitator and air pump, with the necessary solution, zinc, and sump tanks; two labora-

tory filter presses; one complete set of I. M. 24 standard screens; one complete set of Tyler standard screens, after the Rittinger scale.

The installation of an experimental roasting and sintering plant will be undertaken some time during the year.

The plant will be operated free of all charges, including assays necessary for test purposes, on Canadian ores, under the following conditions:

(a) Samples must be bagged and delivered to the plant free of all transportation and unloading charges.

(b) For small scale tests, not less than 200 lb. will be accepted. For large scale tests, not less than five tons will be accepted.

(c) All testing products are to become the property of the Mines Branch unless otherwise arranged before commencement of tests.

(d) Reports of tests will be incorporated in the publications of the Mines Branch, but single copies will be given to owners of samples when their tests are completed.

Under ordinary conditions tests will be made by the Mines Branch officials, but arrangements may be made whereby engineers or other competent persons may supervise their own experiments.

It is expected that the plant will be ready for operation by the first week in July, 1913.

All communications regarding arrangement of tests should be addressed to Eugene Haanel, Ph. D., Director, Mines Branch Department of Mines, Ottawa.

CROW'S NEST PASS COAL CO., LTD.

On April 16 the "Toronto Globe" published the following information relative to the Crow's Nest Pass Coal Co. Ltd., which operates coal mines and coke ovens at Coal Creek, Fernie, and Michel, in the Crow's Nest Pass district, East Kootenay:

After a series of unsuccessful years, shareholders of the Crow's Nest Pass Coal Company were pleased to have reported to them at the annual meeting yesterday that the year 1912 was decidedly profitable, the annual statement showing net profits of \$471,454, which, after deducting the debit balance brought forward from 1911, leaves a credit balance of \$419,423. Net profits were at the rate of 7.58 per cent. on the paid-up capital stock.

Nevertheless there was some spirited criticism of the management at the meeting by some of the minority shareholders, which President Elias Rogers showed an evident desire to quench.

According to the directors' report, coal mined during the year was 1,064,791 tons compared with 359,456 tons in 1911; while coke produced in 1912 was 245,229 tons against 60,659 tons in 1911. During 1911 the mines were closed down for

eight months on account of the strike of miners.

Profits for the year of the Crow's Nest Pass Electric Light & Power Company were \$5,863, with a total balance of that company of \$6,998. The Morrissey, Fernie and Michel Railway has a credit balance of \$25,078, making a total profit of all the companies for 1912 of \$509,398.

Mr. Rogers pointed out that during the year the indebtedness to the banks had been reduced by \$568,099. At the end of the year it stood at \$793,000, and since the end of the year the company has paid \$70,000 more to the First National Bank, leaving the indebtedness now standing at \$725,000.

Pay Off Banks First.

Referring to the prospect for dividends, Mr. Rogers pointed out that in view of the existing financial conditions all over the world and of the fact that the note to the First National Bank was a demand note, and within the power

Crow's Nest Pass Coal Company," he said, "have a property whose intrinsic value has never been truly appreciated until today."

Hon. Robert Jaffray offered a proposal that the minority shareholders should be represented on the board of directors, and two names were submitted. This was not agreed to, however, and the retiring directors were re-elected as follows: Elias Rogers, E. C. Whitney, J. P. Graves, W. H. Robinson, Dr. Goldwin Howland, Colonel W. P. Clough and H. B. McGiverin.

CANADIAN MINING INSTITUTE— WESTERN BRANCH

While the programme for the joint meeting at Rossland on May 22-23 of the Spokane local section of the American Institute of Mining Engineers and the Western branch of the Canadian Mining Institute, has not yet been finally arranged, it is known that a num-

tion demonstrated. It is designed primarily to induce respiration in persons who have been overcome by noxious gases, the apparently drowned, and those overcome by electric shock, or in any other cases where the breathing of those to be treated by it has been stopped entirely but where there is still slight heart action. Most remarkable results have been obtained during the comparatively short time since this apparatus was first introduced, and many lives have been saved by its use. A less important yet distinctly useful invention that will also be exhibited is a locked dynamite-cap box for mine use, patented by A. S. Hamilton, master mechanic for the Western Fuel Co., Nanaimo; also a smaller cap box, suitable for the use of prospectors and others having to carry only a few dynamite caps. The subject of accidents in metal mines and first-aid will be brought up for discussion, and in this connection official statistics and other relevant information will be submitted; also informa-



(Courtesy Natural Resources Security Co., Ltd.)
Pugsley St., the main street of New Hazelton. Four-Mile Mountain in the background.

of the bank to be called at any time, it was considered the best policy to pay off this indebtedness and to build up a good reserve. However, he said that at the present rate of production, barring accidents, it would not be long before the shareholders would be getting some return.

Mr. Rogers estimated that the loss of business to the company owing to the introduction of the use of oil fuel would be about 1,100 tons a day.

Information Not Given.

Mr. G. G. S. Lindsey, former President and General Manager of the company, asked for information concerning the cost of fuel and profits from the business with the Great Northern Railway, but the president was unwilling to give the information.

Mr. W. R. Wilson, general manager of the company, reported the mines to be in good condition, and the outlook for the future to be bright. "The

ber of papers are expected to be read and discussed. Those to be presented by the Spokane local section will include (1) on "The use of Oxygen Helmets in Mine Fires," by E. P. Dudley, of Kellogg, Idaho. This will be a statement of experience in connection with the fire which occurred in the Bunker Hill and Sullivan mine last autumn. Mr. Dudley was several years ago on the Britannia mine staff. (2) "The Effect of Lime on the Solubility of Silver in Cyanide Solutions," by H. W. Foester, Nampa, Idaho.

The secretary of the Western branch has received a paper entitled "Mining and Metallurgy, as Practised in the Sudbury Nickel Fields, Ontario," by Chas. J. Murphy, of Fernie, now chief engineer for the Crow's Nest Pass Coal Company. A Draeger Pulmotor is to be sent to Rossland from the Provincial Department of Mines, Mine-Rescue Station at Nanaimo, Vancouver Island. This automatic resuscitation device will be shown at the meeting and its opera-

tion concerning the activities in British Columbia of the St. John Ambulance Association.

There will be given for the information of visitors particularly an outline of the history and geology of Rossland mining camp and the development of its important mines; also papers descriptive of the surface ore-handling and sorting arrangements at the Centre Star mine, and of the copper smelting works and electrolytic lead refinery at Trail. Incidentally, it may be mentioned that, owing to Saturday, May 24, being a public holiday in British Columbia, the visit to the Trail Smelting works will be made on Friday afternoon, May 23rd, instead of Saturday morning, May 24th, as originally proposed.

The Gerrard correspondent of the Kaslo Kootenaiian says that the Handy mine, near Gerrard, was recently examined by an expert for the British Columbia Copper Company.

LUCKY JIM ZINC MINES, LIMITED.

Prior to holding the annual meeting of the Lucky Jim Zinc Mines, Limited, at Kaslo, B. C., on May 1st, the directors issued to the shareholders the following statement of the operations of the company since the last annual meeting:

The operations at the mine, which were being carried on by way of development work in the lower levels, were continued and preparations were made for shipping clean ore as soon as transportation facilities, being provided by the Canadian Pacific Railway Company, were ready. The railway was completed to the mine about August 1st. Prior to that date orebins were constructed at the mine, for shipping purposes, these bins having a capacity of about 150 tons. An aerial tramway, about 600 ft. in length, was also constructed, to convey the ore from the portal of No. 5 tunnel to the loading bin above the railway track.

A body of shipping ore of considerable size had been developed in No. 5 tunnel, so, as soon as the railway became available, ore was stoped from between Nos. 5 and 4 levels, and shipment was begun. During the months of August, September, October and November about 1850 tons of ore was stoped and shipped to the smeltery at Depue, Illinois. This practically exhausted the shipping ore from that stope. During the time that stoping was being done, development work was continued in No. 6 level on a likely-looking vein that had been discovered earlier in the year. A

small amount of shipping ore was obtained from this vein, but the larger portion of the ore was unsuitable for shipping without concentration.

It has become evident to our engineer and mining superintendent that the vein discovered in No. 6 level is a continuation of the orebody stoped in No. 5 level, and development work has since been done to prove that this is so. While results have been satisfactory, no large body of shipping ore has been obtained by this work.

In December, seven or eight more cars of ore were mined and shipped and then heavy snowslides occurred and completely tied up the transportation facilities. The railway company was unable to get the track clear of snow before the middle of March, since which time ore-shipping has been resumed. Present prospects are that the company will be able to mine and ship seven to ten cars of shipping ore per month.

The quantity of ore shipped between August 1 and March 31 was 2090 tons, gross, and the gross receipts from the smeltery on account of this ore were \$77,537. The freight paid thereon was \$22,608, and the duty \$19,185—together \$41,793. This left \$35,744 as the amount of net cash received from the sale of 2090 tons of ore. The figures are subject to slight adjustments in regard to freight and duty, but the difference one way or another will be but small. The average net value of the ore was \$17, which is a high average.

The proceeds received have been applied partly to pay a claim of the

smeltery company against this company of about \$17,000, which amount, after having been owing more than two years the smeltery company required to be paid. The remainder of the money was used in paying wages and for supplies. On account of there having had to be handled a large quantity of concentrating ore and waste material, receipts were insufficient to pay for all the requirements of the mining done.

Your directors have been obliged to sell part of the treasury stock, in order to raise money to carry on mining operations and to meet other requirements. The company still has available for sale about 150,000 shares of treasury stock; of this the Canadian Pacific Railway Company holds 100,000 shares as security for a contract made with that company by the former management of the Lucky Jim Company, for the shipping of ore to the smeltery over the railway company's lines.

Your directors found in existence a smelting contract with the Empire Zinc Company of Denver, Colorado, which so far it has seemed desirable to maintain. During the past year the smeltery company has given every satisfaction by the manner in which it has handled the Lucky Jim ore.

At the present time there is not available in the mine any large body of shipping ore developed. There is, though, some 50,000 tons of concentrating ore, but it will not be possible to realize on this until after a mill shall have been provided for concentrating it. There is not available in British

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Columbia a suitable custom mill to which the company could send its concentrating ore, so it will be necessary to build one. Our mine superintendent's estimate of the value of the above-mentioned concentrating ore is \$214,000 net, that is, after payment of all costs of mining, concentrating, freight, and duty. The cost of a concentrating mill with a capacity of about 100 tons a day would be about \$80,000, which sum would also include the cost of providing the additional power necessary to operate at the mill.

The concentrating ore mentioned is partly broken down in the mine, so the quantity can be estimated with near approach to certainty. In addition, there is reasonable expectation of a much larger amount of concentrating material being developed in the future.

It is evident that, by some means, a concentrating mill must be provided at the earliest possible time, in order to secure the profitable operation of the mine. The means to be adopted for its provision is one of the important ques-

MINERAL PRODUCTION IN 1912.

Revised statistics of mineral production in British Columbia in 1912 will, when published, show that the preliminary estimate of the Provincial Mineralogist, given out about the middle of January, was within \$200,000 or \$300,000 of the actual recorded value of the production. Exact figures are not yet available for publication, but it is known that the total is in excess of \$32,000,000. The approximate proportions are: Metalliferous minerals, \$18,000,000; non-metalliferous minerals, \$14,000,000. In round figures the value of the respective minerals included may be stated as about as follows: Gold (placer and lode), \$5,800,000; silver, \$1,800,000; lead, \$1,800,000; copper, \$8,300,000; zinc, \$300,000; coal and coke, \$10,500,000; building materials, etc., \$3,500,000. As already stated, these are not exact, but they are near enough to be accepted as indicating about what the official records may be expected to show when they shall be available for reference.

1905 the production was 7450 tons greater. Taking coal and coke together there was only one year—1910—when a higher Total value was reached, that year having been credited with \$321,500 more than was 1912. A considerable reduction was made in the value placed on miscellaneous products, as compared with that shown in the preliminary estimate, thus bringing the total for these below that recorded for 1911. There is much difficulty in arriving at the value of these products, for comparatively few of those directly engaged in their production will make returns. Yet it is believed the value given by the Provincial Mineralogist each year is as near as can be arrived at under the conditions.

Looking at the production returns as a whole, there is certainly good reason for satisfaction with the generally good results achieved in 1912. Lower average prices may affect the 1913 total value to an extent that will result unfavorably in making a comparison between the current year and 1912, when the time shall come for this to be



(Courtesy Natural Resources Security Co., Ltd.)

The Freight House, New Hazelton, one month after railway arrived. Great quantities of freight are received and shipped here.

tions to be considered by the shareholders.

During the past winter the directors found it necessary to instal a steam plant to operate the compressor and electric light plant for the property. This was done at a cost of about \$4000, and the plant is working satisfactorily. With the opening of spring the water supply will again be available, so that, with the steam power as well, the company will have ample power for all purposes required until a concentrator shall be put in.

The directors invite the co-operation of shareholders in connection with the further development of the property. They are of opinion that with a concentrator built at, or near the mine, the operation of the property will result very profitably, and that with sufficient development much larger quantities of ore will be found. They are informed that the quality of the ore in the Lucky Jim mine is unique in America, as regards both clean and concentrating ore. With a concentrator provided, they look for a bright future for the property.

Placer gold reached the highest total in the four years since 1908. Lode gold was within \$11,000 of the highest total on record in the province, namely, that for 1910. Not so favorable is the comparison of total gold-placer and lode together—for in four previous years was the total of 1912 exceeded, as follows: As against a total of less than \$5,900,000 in 1912, totals of higher years were: 1910, \$6,073,380; 1908, \$5,929,880; 1905, \$5,902,402, and 1902, \$6,061,409. Silver was higher in value than for any other year since 1906, and in quantity since 1905. Lead had the highest figures, both in quantity and value, in five years, 1908-1912. Copper figures were the highest on record in all years, as to both quantity and value. In zinc the comparison is not favorable to last year. Coal shows a value nearly \$600,000 less than in 1910, but it is \$1,500,000 higher than the total for 1911, and more than \$2,000,000 higher than that of 1909, with earlier years showing a still greater disproportion. The coke total is the highest on record as to value, but not as to quantity, for in

done; again, there will be the effect of fresh labor difficulties on Vancouver island to adversely affect the result of the 1913 operations, but since the year is still comparatively young, the possible troubles of the future may well be left to take care of themselves when the necessity shall arise for their doing so. Meanwhile, the fact may reasonably be made the most of, that the mineral production of British Columbia in 1912 reached a total value in excess of \$6,000,000 higher than that of any other year in the history of mining in the province, with the mining industry continuing to make good progress.

The Canadian Explosives Company will build a powder factory on James Island. The payroll will be \$25,000 a month.

Canada has a greater railway mileage than Australia and New Zealand, or Italy and Spain combined, and more than all the South American countries.

THE LE ROI TWO CONCENTRATING MILL.

The Rossland Miner of the 16th inst. has the following:

A visit was made to the Le Roi concentrating mill on Saturday. The mill is situated in a canyon above the Black Bear grounds, and, as the ground slopes most abruptly, it looks as though there were seven buildings closely joined together. The object sought, however, in building on such a steep grade, is so that the ore treated can descend by gravity from one floor to the other, which is the custom in all mills of this character. The mill has been in continuous operation for ten years, during which time it has steadily made concentrates which are sent to Trail for smelting, from ore that contains from \$1.50 to \$3.00 to the ton. In the course of the extraction of the ore, and in the development work in the mine, ore is taken from the mine that is of too low a grade to be forwarded to the smelter. This ore has already been mined, and, if thrown on the waste dump, would be a total loss. Instead of doing this it is put through the mill and made to yield a profit.

P. T. Newitt, who has been superintendent of the mill for seven years, showed our representative through it and courteously explained the process to which the ore is subjected. The ore comes into the plant over a small tramway running from the workings in cars propelled by hand. These cars carry from 1,700 to 1,800 pounds and are weighed on a track scale before they are dumped into the grizzly. From the grizzly the ore, which has many large lumps in it, is passed through a 9 by 16 inch Blake rock crusher. This machine with its ponderous iron jaws, crushes the rock into fragments with as much ease as a schoolboy masticates bread and butter. Next, the stream of rock is divided between two 8 by 12-in. Blake rock breakers, which further decreases the size. The ore falls from the rock breakers into storage bins. In turn it is fed from the bins into two large Chilean mills by means of automatic Challenge feeders. Huge wheels revolve on a circular track in each mill and grind the ore to such fineness that it passes out through 30 mesh bronze screens that are located clear around the bottom of the mills. The pulp passes from the Chilean mills by water and gravitation into four classifiers, which separate it into four different sizes the coarsest going into No. 1 classifier, the next in point of fineness into No. 2, and so on till the fourth size is reached, which receives the finest of the pulp.

The pulp passes from the classifiers onto three Wilfley concentrating tables, where the metal is separated from the gangue by a vibratory motion of the tables. The vibratory motion shakes the lighter portion of the gangue in so that it passes over the side of the tables and is carried off by the water, while the heavier portion, containing the metals, is caught in grooves or riffles and goes into a box at the end of each table. Each of the tables is adjusted at a different angle, according to the size of the pulp received from the classifiers. On

each of the tables are three canvas strips, eight inches in width, running the full length of the table. These catch the copper sulphides and lighter float gold, which otherwise would be carried away by the water. These strips are the invention of Mr. Newitt. No. 4 Wilfley table gets the middlings from the other three tables and makes the final savings. The pulp is shovelled into a pulp bin from whence it is conveyed by tram cars to the railway track, where it is placed in ore cars to be transported to Trail, where it is smelted. In the lower portion of the mill there is an automatic sampler where samples of the tailings, as it passes from the mill, are taken to show just what proportion of the values are lost in the tailings. The mill saves from 75 to 85 per cent. of the gold values. The copper value in the ore is about half of one per cent., and a proportion of this is also saved. The mill is run by electric motors. The large Blake rock breaker is operated by a 15 horse power motor, the two smaller rock breakers require a 20 horse power motor. Each of the Chilean mills has a 30 horse power motor, while a three horse power motor operates the four Wilfley tables.

The capacity of the mill is from 50 to 60 tons of ore per day, and as stated above, the ore runs from \$1.50 to \$3 per ton. The ore is somewhat refractory to the concentration method, the gold being associated with the copper makes it difficult to save. It is thought if the plant were provided with slime tanks, a further saving of the values could be made, but still the saving made is very satisfactory. That the mill is a money-maker for the company is evidenced by the fact that it has been kept in operation steadily for the past decade. The cash returns from the smelter for concentrates cut a considerable figure in the monthly reports made by the company's manager, Ernest Levy, to headquarters in London.

For the year ending September 30th, 1912, 1,658 tons of concentrates, valued at \$25.75 per ton were produced from 17,167 tons of low-grade ore. The average contents of the concentrates were 1.096 oz. gold, 0.643 oz. silver and 22.76 lbs. copper per ton. The tailings averaged 0.034 oz. gold and 11.2 lbs. (.056 per cent.) copper per ton. The cost of concentration was \$1.06 per ton.

THE MARCH REPORT OF THE LE ROI NO. 2 MINE.

The "Rossland Miner" says:—

The following is the manager's report of the Le Roi No. 2 Company for March:

Josie Mine Report for March—Shipped 1,789 tons of ore and 192 tons of concentrates. The receipts from the smelter are \$21,906, being payment for 1,776 tons of ore shipped and \$3,267, being payment for 197 tons of concentrates shipped. In all, \$25,173.

Estimated cost for corresponding period: Development, \$9,500; ore production, \$8,500; milling, \$1,500; total, \$19,500.

South Rodney Drift, 1650 Foot Level: Besides the production last referred to,

two more lots have been shipped as follows: Lot 265 dry weight, 157 tons assayed 0.74 ozs. gold, and 5-16ths per cent. copper; Lot 270 dry weight, 52 tons assayed 13 dwts gold and 13-32nd per cent. copper.

37 Raise, 700 Foot Level: Advance 24 1-2 feet, of which 15 feet averaged 3 dwts gold and 7 per cent copper, across an average width of 3 feet.

36 Drift, 300 Foot Level: Advance 35 feet, of which 35 feet averaged 9 dwts. gold and 1 1-2 per cent. copper, across an average width of 22 inches.

38 Drift, 400 Foot Level: Advance 48 feet of which 72 feet averaged 8 dwts. gold and 4 per cent. copper, across an average width of 32 inches.

Annie Drift, 500 Foot Level: Advance 99 feet, of which 89 feet averaged 3 dwts. gold and 3 1-4 per cent. copper, across an average width of 14 inches.

37 Intermediate Drift, 700 Foot Level: Advance 20 feet of which 20 feet averaged 12 dwts. gold and 11 per cent. copper, across an average width of 4 feet. Total width is not shown. The same ore shoot discovered 56 feet below this to the foot-wall, 700 foot level: 10 dwts. gold, 11 per cent. copper, over 9 feet.

CONDITIONS AT TRAIL SMELTER.

The Rossland Miner, of the 9th inst., has the following interesting review of conditions at the Trail smelter:

The smelting plant of the Consolidated Mining and Smelting Co. of Canada, Ltd., at Trail, continues to grow in size and importance, and, at the same time, it keeps in step with the latest advances in the science of metallurgy. If there is anything that is new and at the same time economical and efficient in the treatment of copper and lead ores, it will be found that Trail has adopted it. It is by following out the very best methods that custom ore is treated for as low as \$3.50 per ton. A Rossland Miner representative visited the Trail smelter last Saturday, and, from J. Buchanan, the superintendent, the following facts concerning smelter betterments were learned:

The new Huntington-Heberlin plant is almost completed; in fact it is in use at present, and only a few conveyors and brick bins remain to be placed in position. The plant is for sintering the lead ores. It is the old process, but the installation is intended to handle the ores in a more economical manner. One of its features is saving the cost of roasting, which amounts to considerable on each ton of ore treated. A 20-ton crane, just installed for handling the products of the process, is also an economical feature. The lead products of the process used to be trammed, while the crane picks them up and transports them to the crushers.

Two 22-foot wedge roasters are being installed. They are an important improvement on the old roasters, as they save on both fuel and labor. It is hoped that they will be able to take the place in time of the Huntington-Heberlin roasters.

A gas producer is being built with the idea of using gas firers in all of the lead roasters.

A new copper furnace, 30 feet in length, is being built. It will have a capacity of reducing 450 tons of Rossland ore in a day. There are three copper furnaces now in operation in the smelter, the largest having a capacity of 350 in 24 hours.

The lead furnaces are being lowered a distance of nine feet to the level of the copper furnaces so that the floor of the copper and the lead furnaces will be all on the same level.

The Lead Refinery.

In the lead refinery 242 tanks are in operation, turning out about 65 tons a day. There are some 84 tanks, which were recently installed, but which are not yet in use. With these in operation more than 100 tons of lead a day could be outputted. All of the lead refined, amounting to 1,800 tons a month, or 21,600 tons a year, is consumed now in Canada, and is shipped from the refinery all over the Dominion, from ocean to ocean. None is exported at present, as the demand is keeping up with the supply. Two large concerns in Montreal are engaged in making white lead out of the lead sent from the Trail refinery. The silver turned out of the refinery is sent to the Orient. The sulphate of copper, produced as a by-product in the refinery, is sent to the prairies, where it is used in blue stonington wheat, killing the germs of smut and other diseases of wheat before it is planted. The gold turned out of the refinery is sent to the assay office at Vancouver.

The refinery, which was started in 1902 with a capacity of eight tons a day, and 25 tanks, has grown since to its present large proportions of over 100 tons a day. It has resulted in the production of lead sufficient to supply all of Canada. Up to the time this refinery begun to turn out refined lead, all of the lead used in Canada was imported from other countries. J. F. Miller is the superintendent of the refinery, and has been in charge of it from its beginning.

GREAT ACTIVITY ROUND GREEN CITY.

The Rossland Miner of the 30th inst says:

George H. Green, manager of the Green City Co., has just returned from Green City and is pleased to say that the snow conditions will not interfere with the company starting operations. A number of men will be employed by the company inside of ten days.

The first work to be done will be at the saw mill and in looking after the flumes to see they are in shape to carry the water for the running of the mill.

Then an exhibit of gold-copper and silver-lead ores will be got out for Nelson, Spokane and Vancouver. This exhibit, no doubt, will be the cause of bringing in the mining investor and capital to Green City.

The Green City company will work steadily and will increase the force as conditions require.

The Second Relief mine is working now. A. H. Litchfield, the manager, has just completed the telephone line to the mine, which is of great service and results in the saving of money. The mine is in splendid condition. It has about 1,000 tons of ore broke that runs \$40 to \$50 to the ton, and there is considerable ore blocked out. From the ore that they run through the mill they got a gold brick of \$3,000 from a twelve days' run.

Messrs. Gobb and Cook, owners of the Fisher mine, are going to do considerable development this summer. The mine adjoins the Belle and Rose group, at Green City.

John Pritchard and associates are going to do extensive development on the Pritchard mine, which is on Burnt Creek about one mile from Green City. They have the money and are now waiting for the roads to get in good condition to get supplies and provisions in.

The Arlington mine is working steadily and has shipped, during the last four months, twelve carloads of high grade ore.

The Keystone leaser, W. Wilson, has struck a ledge of high-grade ore similar to that of the Arlington.

S. L. Myers, manager of the Lucky Boy Mining Co., has just returned from Los Angeles, California, with the necessary money to operate the Lucky Boy mine and to put it on a shipping basis, and expects to ship considerable ore this summer. One ledge is uncovered carrying ore similar to that of the Second Relief ore which is very high grade, and another ledge, which is four feet wide on the surface, of copper-gold ore, which is of a shipping grade. This ledge has just been struck by a tunnel, run 350 feet, which gives a depth of 120 feet of stoping ground. Mr. Myers is now preparing to get in provisions and supplies to work all summer.

Mr. Myers is also manager of the Security group at Green City, which has considerable work done on it. One tunnel has been driven 500 feet, which gives a depth of 300 feet of stoping ground on the vein, which is six feet wide between walls, and has 18 inches of clean ore of a shipping grade. Both the Security group and the Lucky Boy mine are well equipped with ore cars, rails and all the necessary mining tools and have fine buildings, such as ore bins, bunk houses and boarding houses.

E. Bellinger, who has a lease and bond on the Black Rock mine from Mrs. John McAvoy, of Erie, has struck the ledge by tunnel, which gives a depth of 40 feet. He is drifting on the ledge which is from 20 to 30 inches wide and of a good grade of ore. This mine is situated halfway between Green City and Erie.

Gus Hagland, hotel keeper of Erie, who is in communication with Peterson Brothers, who own the large tract of fine timber at Green City, says he expects them in in the next two or three weeks to commence the clearing of their big saw mill site.

MARCH REPORT OF VAN ROI MINE.

Following is the report of the company's manager of the Van Roi mine for the month of March:

Mill report for the month of March: Total amount crushed, 2,848 tons (average assay 4.8 oz. silver; 1.1 per cent. lead, 4.1 per cent. zinc), yielding 37 tons lead concentrates assaying 153.8 oz. silver, 56.5 per cent. lead, 10.4 per cent. zinc; and 65 tons of zinc concentrates, assaying 42.9 ozs. silver, 3.9 per cent. lead and 40.1 per cent. zinc. The mill ran 479 hours.

Total approximate value, \$4,991.

Estimated expenditure for corresponding period: Development \$4,136; ore production, \$8,800; milling, \$2,878; total \$15,814.

Capital expenditure, \$1,012.

Raise, level 7: Position 1,425 feet west of portal. This has now connected levels 7 and 5. Advance 55 feet. The uppermost 40 feet averaged 54 ozs. silver, 3 per cent. lead, 27 per cent. zinc, over a width of 7½ inches.

Raise, Level 7: Position 1,082 feet west of portal. Add 35 feet to following advance to find height of back above floor of Level 7. Advance 34 feet.

Raise, Level 9: Position 1,477 feet west of portal. Add 23 feet to following advance to find height of back above Level 9. Advance 112 feet.

Intermediate (7-5) Drive, Eastwards: Position 43 feet below Level 5, from Raise 1,425 connecting Levels 7 and 5. Advance 14 feet of which 10 feet averaged 16 oz. silver, a trace of lead, 16½ per cent. zinc, across six inches.

Intermediate (7-5) Drive Eastwards: Position 43 feet below Level 5, from Raise 1,425 connecting Levels 7 and 5. Advance 40 feet of which 10 feet averaged 15 ozs. silver, a trace of lead, 10½ per cent. zinc, across six inches.

Intermediate (9-7) Drive Westward: Position 127 feet above Level 9 from Raise 1,477 to connect Levels 9 and 7. Advance 29 feet.

Latest advices today: Stope 3, No. 9 Level:—East Stope, No. 4 Level: Great improvements.

William Whitford has taken a lease for two years on the San Francisco mine in Rossland from E. W. Martin and E. D. Martin of Winnipeg, and "Fighting" Joe Martin, formerly of this province, but now a member of Parliament in England, says the Phoenix Pioneer of the 5th inst. There is a small shaft and some surface excavations on the property, the under ledge carries gold, silver and copper, and assays give values of about \$30 to the ton. Mr. Whitford will start work soon with a small force of men. The San Francisco was purchased by Joseph Martin and brothers in 1896, for \$25,000. Martin Salmon and associates were the vendors of the property. The San Francisco adjoins the White Bear, and is located on both sides of the tracks of the Red Mountain Railway, west of the Black Bear grounds.

GOOD RETURN ON FIRST SHIPMENT FROM HARRIS MINES.

The Omineca Herald of the 11th inst. says:

The actual smelter returns from ore shipped from the New Hazelton district have been received and they are up to expectations. The Harris mines gave seventy-three dollars net, a price which will place the mine in the high grade class and which also places the camp in the high-grade class. Everyone interested in this district has heard about the high grade ore, but that information was gained only from assays. The real smelter returns are what count. Seventy-three dollars net means a good big profit in the ore for the owners and stock holders. With a lower freight rate, with a shorter haul over the new bridge to the depot, and with the improved ore in the bottom of the shaft, the second car-load

The development thus far done on the Harris Mines includes the following:

On No. 1 vein a shaft has been sunk 100 feet and then a drift was run to the north a distance of 40 feet from the bottom of the shaft.

On the No. 2 vein a tunnel was driven a distance of 380 feet and it cross cut the vein at the 125 foot level, and from that they cross cut a distance of 80 ft. to the west.

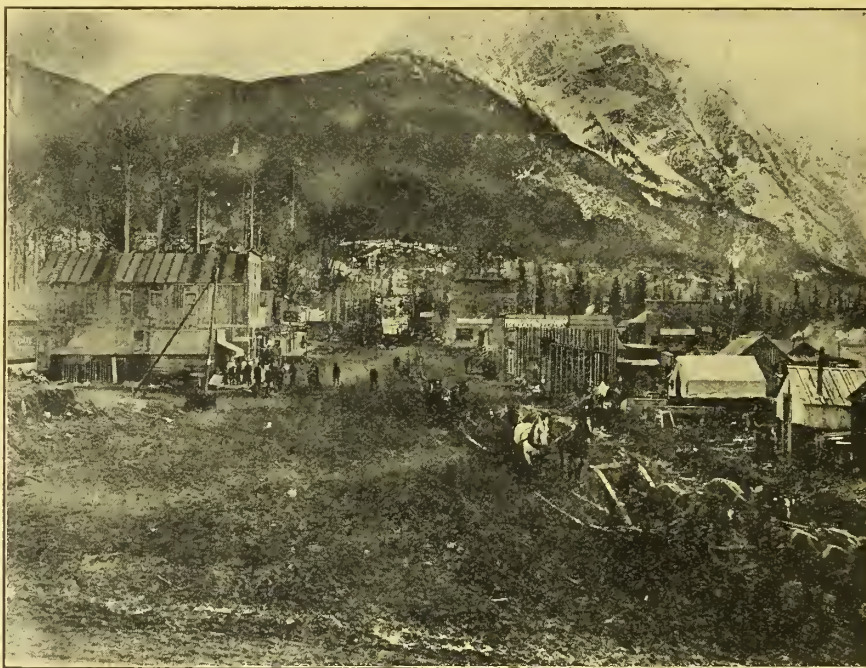
On the No. 3 vein, the vein which to date has proven the best from a commercial stand-point, a shaft has been sunk 185 feet. From the 100 ft. level a drift 90 ft. was run to the north and it opened up some nice ore. From the same level another drift to the south was run 30 ft. At the 185 foot level a drift to the north has been run 120 feet, and in this the boys have some of the best ore in the camp. The new shoot which was opened a few days ago on this level has caused a

point, and there is every reason to believe that it will be the first mine in the district to pay a dividend.

PROGRESS OF MINES IN HAZELTON DISTRICT.

The Omineca Miner of the 12th inst. says:

The latest developments in the Harris Mines workings show beyond a doubt the value of the property. On No. 3 vein a drift is being run to the north on the 185 foot level. A few days ago the vein, which throughout carries good ore, showed two feet of clean silver-lead and grey copper ore in the bottom. The shoot is proving continuous, and now extends nearly to the top of the drift in its face. This is perhaps the richest ore yet uncovered in this promising mine, and the local people who are



(Courtesy Natural Resources Security Co., Ltd.)
Pugsley Street, New Hazelton. Rocher de Boule in the background.

should show a much higher return. It is the firm belief of all who have examined the Harris mines that the best ore and the biggest ore shoots are yet to come. This has been proven as the development has progressed. Every new shoot opened as the shaft went down has been better than the one previous.

The Harris mines are owned and controlled by the Harris boys, all practical miners, and they have done most of the work and have had full charge themselves. On this account they have accomplished more real development work than any other mine in the district. They are in a position now where they can take out enough ore to meet all expenses of future development, and at the same time put the mine in such shape that big profits can be made as soon as the smelter and freight rates are adjusted and are more satisfactory.

much more confident feeling, it is from this vein that the next car of ore will be taken.

On No. 4 vein surface work has been done to the extent of 300 feet, and on the No. 5 vein to the extent of 250 feet.

In the No 3 vein there is from 2 to 3 1-2 feet of solid ore all the way down the shaft. In the bottom of the drift on the 185 foot level they have 2 1-2 feet of high grade and solid, clean ore, and this has continued with them for a distance of over 40 feet, which is as far as the drift was continued.

The Harris boys are now busy getting out about twenty-five or thirty tons of ore for shipment about the first of May. It will be sent to the Tacoma smelter as they can save about four dollars per ton on the freight.

From now on the Harris Mines will rapidly approach the dividend paying

interested in the property are much pleased with the showing. Harris brothers and Jack Mullan are the principal owners, practically all the company's stock being owned in Hazelton.

Returns have been received from Trail smelter for the first shipment of Harris Mines ore, which brought the company over \$70 a ton after paying all charges and deductions. While this figure may be regarded as satisfactory, the management believes still better results will be obtained in the future, as a reduction in the high freight rates is looked for and more favorable smelting rates have been offered, while the ore which is now being taken out is of higher grade than that previously shipped.

The Erie will ship to Tacoma smelter next week a car of high grade silver-

lead ore of very fine appearance. Duke Harris on Thursday reported that the cross-cut tunnel had been driven thirty feet from the face of the open cut, giving a total length of 100 feet. The tunnel will be driven 250 feet further, according to expectations, before reaching the ore. In the meantime the high grade ore already on the dump will be shipped. A Truax ore car and three hundred feet of track have been delivered at the mine and their installation will enable the working force to make even better time.

Work on the Rocher de Boule mine has been suspended, pending the installation of machinery. Engineer Green, who examined the property for the company, made a decidedly favorable report with the result, as Superintendent Cowan informed the Miner, that the equipment of the mine with a power plant and drills has been decided upon. The property is now considered to be developed to a point where the installation of a plant is not only justifiable but necessary, the cost of hand work being excessive. Mr. Cowan is on his way to Butte to consult with the management regarding the improvements.

The Omineca Development Co., a Vancouver corporation holding hydraulic leases on Fall River, a tributary of the Omineca, intends to proceed with the development of its placer ground this season. R. D. Featherstonhaugh, well known here as an expert hydraulic operator, is interested in the proposition, and is expected to leave Hazelton with a crew of miners in June, to begin work on the property.

The board of trade is preparing an exhibit of Omineca district ores and coal, to be sent to the Imperial Institute in London, where the display will be given the prominence it deserves. Mining men throughout the district have signified their intention to contribute specimens.

GOOD PROGRESS AT ROCHER DE BOULE.

Miners arriving in New Hazelton this week from the Rocher de Boule say the men working in the breast of the long drift have opened up another big shoot of 20 per cent. copper. They state that there is two feet of this solid ore in the face and rapidly widening, showing exactly the same characteristics as the 110 feet of ore drifted on in this lead which averaged about 4 feet solid chalcopryite. The so-called barren spot in this drift averaged about three per cent. copper and only existed for about twelve feet when the new ore was encountered. Surface indications above this new strike show an average of about six feet of ore on the surface for a distance of about 200 feet further toward the west line.—Omineca Herald.

The Trail smelter now has three copper furnaces in operation, and another one is being built that will reduce 450 tons of Rossland ore in a day.

THE BUOYANCY OF BRITISH COLUMBIA.

Under the above appropriate title, Mr. John Nelson, business manager of the Vancouver News-Advertiser, has compiled on a single sheet the following official statistics, taken from the figures given by the Hon. Price Ellison, Minister of Finance for British Columbia, in his Budget Speech delivered in the Provincial House on the 24th of February last. The astounding progress of this province is laid in simple and concrete form before everyone seeking information on the subject by this handy little reference compilation, and Mr. Nelson is deserving the warm appreciation of the public for his enterprising idea in putting these important official facts into compact shape for quotation and information. A large number of copies have been sent to England by private parties. We quote the particulars in full for the benefit of our readers as follows:

On Feb. 24th, 1913, Hon. Price Ellison, Minister of Finance in British Columbia, delivered his Budget Speech. From it the following extracts are made:

Every Man, Woman and Child Produced \$300.

In British Columbia last year the total production in natural products was \$100,000,000, and in manufactured products \$20,000,000. (est.) This means a production per head for every man, woman and child in this province, of over \$300.

Government Spending Seventeen Millions This Year.

The estimated expenditure of the Provincial Government for 1913 is \$17,000,000, or \$40 per capita of the entire population.

Mining Industry Beats All Records: Thirty-two Millions.

British Columbia beats all its own records in mining in 1912, passing the previous year by \$9,000,000 and aggregating the enormous total of \$32,600,000.

Dividends of over \$3,000,000 were earned.

At the present rate in another decade the production of British Columbia mines will reach \$100,000,000.

Greatest Fishing Province in the Dominion: Thirteen Millions.

In fishing products British Columbia last year jumped to first place in the whole Dominion. The product was \$13,678,000, Nova Scotia falling to second place with \$9,368,000.

British Columbia produced over a third of the fish products values of the Dominion. Despite an "off" year the salmon pack was the greatest in years, reaching 996,576 cases of a value of \$10,000,000.

Of whales 1,095 were taken valued at \$650,000.

Lumber: Nineteen Millions.

In timber the cut was 1,262,000,000. Value \$19,000,000.

Paper and Pulp: Million and a Quarter.

In paper and pulp—a new industry—the production amounted to the sum of \$1,250,000. This year the Finance Minister estimates it will reach \$3,250,000.

The investment in five pulp plants in the Province is from \$12,000,000 to \$15,000,000.

Assessment and Civic Revenues.

In 1912 Provincial assessments rose to \$183,000,000—an increase over 1911 of \$38,000,000.

Municipal assessments in Vancouver, Victoria and New Westminster alone rose from \$204,025,425 in 1911 to \$294,371,845 in 1912.

Civic revenues in the same cities rose from \$4,802,354 in 1911 to \$6,294,539 in 1912.

Agricultural Products: Twenty-one Millions.

Agricultural production increased last year over the previous year by a million dollars to \$22,452,412.

There are 7,000 farmers' institute members and 1,000 women's institute members.

Live stock production increased by \$840,000 over 1911.

Bank Clearances: Eight Hundred Millions.

Bank clearances rose from \$678,414,170 in 1911 to \$827,663,311 in 1912—an increase of \$145,000,000.

Railway Construction: Twenty-five Millions.

During 1912 over 2,000 miles of railway was under construction in British Columbia, involving an expenditure of \$25,000,000. The Government itself spent over \$5,000,000 on 1,500 miles of roads and trails.

Population: Four Hundred Thousand.

It is estimated that from 75,000 to 100,000 people came into the Province in 1912, over half of whom were from outside the Dominion.

The population is now estimated at 400,000.

CANADA'S PRODUCTION AND IMPORTS OF ZINC.

The production of zinc ore in Canada in 1911, as obtained by direct returns from the producers, was 2,590 tons valued at \$101,072, the greater part being from British Columbia. The zinc content of these shipments was returned as 2,346,849 pounds, which if valued at the average New York price of spelter during the year would be worth \$135,132.

The ore shipped from British Columbia contains also a varying silver content, for which payment is made by the smelters and without which on account of the import duty to the United States and the long rail haul, it would not pay to ship. The Richardson, or Long Lake mine, in Olden Township, Frontenac County, Ontario, did not ship during 1911.

The British Columbia shipments were seriously reduced as a result of the destruction of mills, mine buildings, and railway facilities by the forest fires of 1910, there being only two shippers in 1911.

The British Columbia zinc ore is exported for treatment to Kansas and Oklahoma smelters, and since the smelters demand over 30 per cent. zinc, the maximum rate of the United States customs tariff affects Canadian ores.

The present schedule of the tariff on zinc is as follows:

Ores containing less than 10 per cent., free of duty. Ores containing 10 per cent. or more, and less than 20 per cent., $\frac{1}{4}$ cent per pound. Ores containing 20 per cent. or more, and less than 25 per cent., $\frac{1}{2}$ cent per pound. Ores containing 25 per cent. or more, 1 cent per pound.

All rates being based on the metallic contents of the zinc.

The United States smelters usually pay on a basis of 45 per cent. zinc content. The base price varies with the price of spelter at St. Louis, and a stated amount is added or deducted for every unit of zinc in excess of or less than the base. The silver is settled for at the New York price after making deductions for losses in treatment. Limits are frequently set which lead or iron contents may not exceed.

A typical example is given in the report of Mr. Cosmo T. Cartwright, B.Sc., of the Department of Mines. A certain mine was paid \$28.50 per short ton for zinc concentrates carrying 45 per cent. zinc, when spelter was quoted at 5 cents per pound at St. Louis. For every unit above or below 45 per cent. zinc 85 cents were added or deducted. For every increase or decrease of one per cent. per pound in the price of spelter in St. Louis an increase or decrease was allowed of \$7 per ton of 2,000 pounds, and proportionately for fractions thereof. In the case of the silver content, six oz. per ton were deducted and 75 per cent. of the remainder paid for at the New York price.

The sellers paid freight, customs duty and collection charges.

The imports of zinc taken as an index of consumption show a fairly steady increase. The total imports of zinc in blocks and pigs and spelter were, in 1880, some 744 tons. In 1889 they had risen to 1,427 tons, and remained fairly stationary until about 1899, in which year the imports were 1,215 tons. In the fiscal year ending March, 1910, they had risen to 4,610 tons, and for the calendar year, 1910, they totalled 7,037 tons in addition to which there were 4,248 tons of zinc white, and zinc manufactures to the value of \$21,829.

For the calendar year 1911, the total imports were 7,534 tons, in addition to which there were 4,269 tons of zinc white and zinc manufactures to the value of \$30,862.

COPPER COMPANIES IN BRITISH COLUMBIA

Messrs. Thompson, Towle & Co., of New York City, have compiled and published a statement showing the produc-

tion, estimated earnings, and dividends of the important copper mines of the United States, Mexico and Canada. Only two companies operating in Canada are included, namely, the British Columbia Copper Company and the Granby Consolidated M. S. and P. Company—both in British Columbia. The Britannia was either overlooked or the corresponding particulars of operations and results were not obtainable. The published particulars for 1912 follow, with estimated approximate figures for 1913 shown in brackets:

British Columbia Copper Co.—Number of issued shares, 591,709; par value, \$5; copper produced, 22,630,000 lb. (22,000,000 lb.); cost per pound, 12.86 cents (10 cents); earnings per share, 72 cents (with copper at 15 cents a lb., \$1.01; earnings each one cent change, 20 cents a share); amount and date of last dividend, 15 cents a share, January 15, 1913. Remarks: Cost in 1912 due principally to lower grade ore treated.

Granby Consolidated—Number of issued shares, 149,648; par value, \$100; copper produced 22,630,000 lbs. (22,000,000 lb.); cost per pound, 9.50 cents (9.50 cents); earning per share, \$10.80 (with copper at 15 cents, a lb., \$8.09; earnings each one cent change, \$1.47 a share); amount and date of last dividend, \$1.50, March 1, 1913. Remarks: Company owns Hidden Creek property; has \$1,500,000 convertible bonds. Estimated production, cost, and earnings per share when reduction plants shall have been brought up to capacity: Production, 45,000,000 lb.; cost 9 1-2 cents; earnings per share—with copper at 12 cents, \$6.84, at 13 cents \$9.58, at 14 cents \$12.31, at 15 cents \$15.05, at 16 cents \$17.78, at 17 cents \$20.52.

ANNUAL MEETING OF BOUNDARY MINING & EXPLORATION CO.

A Grand Forks despatch of the 19th inst. says:

The annual general meeting of the Boundary Mining & Exploration Company was held at Midway last week. This company owns what is known as the Midway coal mines, upon which an energetic policy of development work is being carried out. The following officers were elected:

President and general manager, A. E. Watts, Wattsburg, B.C.

Vice-presidents, A. Cairney, Kaslo, and S. J. Miller, Grand Forks.

Secretary-treasurer, E. R. J. Forster, Sparwood, B. C.

Directors—Thomas Caven, M. P. P., Cranbrook; J. Haight, Slocan; F. H. Knight, Spokane; H. Bunting, Victoria.

The report of the secretary-treasurer showed a balance in the treasury of some \$16,000, while a large amount of machinery, including pumps, compressor and hoist, was now being installed on the property. The company has ample capital to meet all expenses in connection with the present development of the mines, which is being done from the No. 2, or main working tunnel. From the tunnel an incline shaft is being sunk on the coal seam, a large excavation having been made to accommodate the ma-

chinery necessary in the sinking of the shaft. Two shifts of 14 men are at present employed on the property, under Mr. Keith, the resident engineer.

The Kettle Valley railway is building a spur to the mine and as soon as this is completed, the railway will use the coal for its locomotives. It is not the intention of the company to try to market the product outside of that used by the railway until next fall, when it is anticipated that there will be a sufficient amount blocked out to enable the company to place the coal on the market.

The meeting was largely attended, 50 shareholders from Spokane, Victoria, Vancouver, Medicine Hat and other points in British Columbia and Alberta being present.

LEAD PRODUCTION IN 1912.

Final figures of lead production in the United States in 1912, published by the geological survey, gave total production of refined lead in 1912 as 480,894 short tons, says a Washington, D. C. despatch to the Boston News Bureau. This is 71 tons less than the estimate of the survey on Jan. 2, 1913. In addition there were 13,552 tons of antimonial lead. Refined lead total is made up of 88,377 short tons of desilverized lead of foreign origin, 221,580 tons of domestic soft lead, and 29,789 tons of desilverized domestic soft lead. Total value of refined lead was \$43,280,460. Calculated at 4.5 cents per pound, average New York price for the year, domestic lead was worth \$35,326,530. Total refined lead output was 6,085 short tons less than 1911, a decrease of 1.2 per cent.

Missouri had the greatest output, 162,610 tons, almost 20,000 tons less than in 1911. Idaho came next with 127,707 tons, a gain of 10,372 tons over the figures of 1911.

Lead available for consumption in 1912 is calculated at 410,953 tons, an increase of 11,766 tons, or 2.9 per cent. over 1911.

Imports have declined from 225,090,312 lbs. in 1909, to 1912, with 167,121,592 lbs.

Mexico furnished in ore or base bullion 159,455,664 lbs. of 1912 imports; South Africa, 3,207,936 lbs. of lead ore; other countries, 3,309,356 lbs., the largest part in German East African ore.

OTTAWA MINE SOLD

For a cash consideration the Consolidated Mining and Smelting Company of Canada has purchased the Ottawa mine on Springer creek, near Slocan City.

There is approximately 7,000 ft. of tunnelling in the mine, which is equipped with an air compressor and other plant operated by water-power. For several years it has been worked by lessees. The ore is dry silver.

"The purchase of the Ottawa by the Consolidated Company means much for Slocan City division of Slocan district as the Trail company is noted for the progressive manner in which it carries out its mining operations, and 1 ex-

pect to see extensive developments at the mine as a result of the deal," said Mr. McPhee, the local representative of the former owners, to the "Nelson Daily News."

For some time the Ottawa mine was one of the important producers of silver in the Slocan district. In 1904 the shipments of ore amounted to 1,330 tons, which netted from the smelter \$120,000; this was mined and shipped at an expenditure of \$50,000, leaving an actual profit on the year's operations of \$70,000. The net value of the ore at the point of shipment averaged during the year slightly more than \$90 per ton; the value was practically entirely in silver, the ore running from 175 to 200 oz. to the ton in this metal, with 22 per cent. lead and 20 per cent. zinc.

The group consists of a number of claims situated on the north side of the valley of Springer creek. It is connected with Slocan City by a wagon road. The mine workings are about 1,000 ft. above the level of the creek.

The claims were acquired about 1902 by a Pittsburg syndicate of which the late T. A. Noble was president.

There are two distinct veins on the property, developed by adit tunnels. Both veins are strong and clearly defined.

TO RESUME WORK AT QUEEN MINE

E. V. Buckley, manager of the Queen mine at Salmo, announced on April 18, that he proposed to make an endeavor to recommence work at that property, against which a strike was declared about two months ago. Already some men have resumed work, he stated to the "Nelson Daily News."

"I am not fighting the union in taking this action, as I believe that the majority of the men desire to return to work. I have always paid good wages, and have never failed to pay extra for work which has to be carried out under bad conditions. The other property at Sheep creek, which is paying the higher scale, is doing so on account of the unfavorable working conditions at that property. It has been said that all the other mines in the district are paying the increased scale demanded, but I can prove that this is not the case at at least two properties," declared Mr. Buckley.

In support of his view that the men desired to return to work he quoted a petition which was circulated among the miners who went on strike on the understanding, said Mr. Buckley, that if a majority of those still in the district signed it the strike would be called off. Thirteen, said to be a majority of those still in the district, signed, but were told, Mr. Buckley understood, that a vote of the district would be necessary before the men could return to work. The petition, which was signed by the 13 men, was as follows:

"Inasmuch as we, the undersigned miners of the Queen mine, consider that we were called out on strike under a misunderstanding,

"And whereas we were under the impression, when we came out on strike, that there was to be a general strike, and that we were to receive the support of the rest of the local unions throughout the district,

"And whereas this was not the case and the local unions have not, and will not, give us their support,

"Therefore we, the undersigned miners of the Queen mine hereby declare our intention of going back to work, and we wish to state that we firmly believe that we are fully justified in this action."

NEW TYPE "A" GYRATORY CRUSHERS.

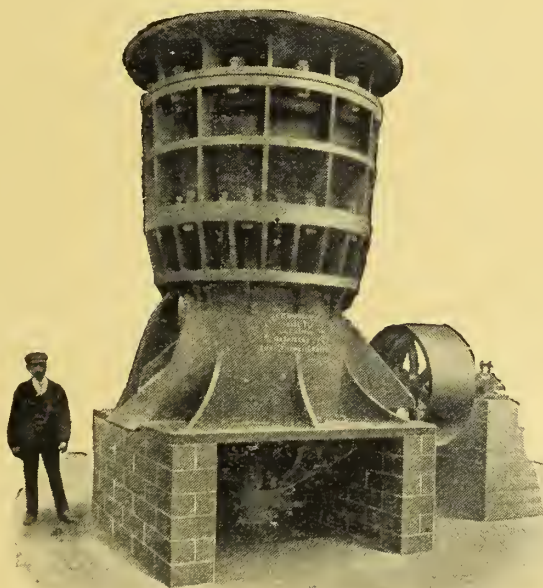
Below will be found an illustration of one of the larger sizes of gyratory crushers made by the Hadfield Steel Foundry Company, Limited. This firm, the manufacturers of patent "Era" manganese steel, under the process invented by Sir R. A. Hadfield (recently knighted in recognition of his work in this connection) is well known in this country, their crushers or wearing parts and wheels and axles having been used for many years by practi-

cally all the mining companies and reduction works in this province.

in designing this new type of crusher two most important points were continually kept in view; firstly, the necessity of easy accessibility to the working parts of the machine for purposes of adjustment and renewing of wearing parts; and secondly, the advisability of making provision wherever possible for all wearing parts being made of manganese steel.

The main shaft of this new type "A" crusher is made of hollow forged steel. Spider-arm shields are fitted, made of manganese steel, the shoots are lined with manganese steel plates, and, as usual, the crushing cone and concaves are also of this material, made, of course, under the Hadfield patents. Messrs. Hadfields have also followed their standard practice of fitting a mantle made of manganese steel on to a cast steel head or centre, the former only being "scrapped" when worn out, thus effecting a distinct saving in the cost of renewals.

Lack of space prevents us from going into further details, but we believe full information concerning these new crushers may be obtained from the agents for the manufacturers, Messrs. Peacock Brothers, of Montreal and Vancouver.



New Type "A" Gyratory Crusher.

THE URANIUM AND RADIUM SITUATION

(By Charles L. Parsons, Chief, Division of Mineral Technology of the United States Bureau of Mines.)

Some months since rumors reached the U. S. Bureau of Mines of an increased demand for carnotite ores from Colorado and that these ores were being shipped abroad in some quantity. Further, it was reported that the methods of production involved large losses of material and that methods for concentrating low grade material now being thrown on the dump were greatly needed. Accordingly, Messrs. R. B.

It will be noticed that the upper part of the shell appears to be of lighter construction than is usually found embodied in this type of crusher. This is rendered permissible by the fact that the concave casing is made of steel, the breaking strain being approximately six times greater than that of cast-iron, thus allowing great strength to be combined with lightness.

Messrs. Hadfields have placed on the market, within the last year a new design of Gyratory Crusher called by them, type "A." We are informed that

Moore and K. L. Kithill were assigned to the task of investigating the situation with headquarters at Denver, where the bureau established a laboratory for the purpose of investigating the rarer metals occurring in the Western part of the United States, and problems bearing upon the prevention of waste and increased efficiency in the mining industry. The surprising conclusion has been reached that while all the radium placed upon the market in the last few years has been produced in Europe, a large portion of this output has come from American ores.

Radium institutes have been established in Austria, France, Germany and England, a European science and industry have been developed from American radium ores and even the uranium present with the radium has been manufactured into marketable condition only in foreign countries and returned in finished condition to our own. American hospitals and physicians have been forced to procure from abroad such radium as they could afford for experimental purposes, and investigations in our governmental and university laboratories of the wonderful properties of radium and their possible application to the eradication of disease and the development of industry have been hampered by the almost prohibitive prices at which the finished material is held.

While the Austrian government, realizing the untold possibilities of the radium ores of St. Joachimsthal, has purchased the mines, put their output under direct governmental supervision, and has entered into an arrangement whereby this ore is worked up in co-operation with the Vienna Academy of Sciences for experimental purposes in a carefully administered radium institute, America has allowed her large and much greater resources to be exploited on a basis which wastes perhaps irretrievably a large portion of the material mined, and has exported carefully selected ores at a price by no means commensurate with its radium value if worked up at home.

Even before carnotite was exported, pitchblende of the highest grade was sent out of the country at the time when the world's radium output was supposed to be coming from Austrian ores. At least 20 to 25 tons of high-grade pitchblende has been sent out of the country. Within the last two years, however, foreigners have realized the value of our carnotite resources and most of the radium that has been exported has gone abroad in this ore.

During the last year, carnotite carrying 28.8 tons of U_3O_8 , from which 8.8 grams of radium chloride or 11.43 grams of radium bromide could be obtained, were produced. Practically all of this ore was shipped abroad for the extraction of radium. The value of the radium salts extracted would be at the minimum market price—\$528,000. The total supply of radium salts from all other sources including the Austrian mines was probably not more than 3.65 grams of radium chloride, basing the production of the Austrian mines for 1912 upon that of 1911 which is known.

Pitchblende, the richest of all uranium minerals, is composed mainly of uranium oxide, but also carries lesser

quantities of a large number of other substances. It has been found in small quantities in Connecticut, and in the feldspar quarries of North Carolina. Practically the total American output has come from the mines in Quartz Hill, Gilpin County, Colorado. The mineral is a heavy black substance which can be readily identified by any one who will suspend a sample of the pitchblende above a photographic plate wrapped in black paper and kept in the dark for a few days with a key or other metal opaque to radium radiations placed between the sample of ore and the plate so that when the plate is developed a shadowgraph of the object may identify the ore. Pitchblende may carry as high as 80 per cent. uranium oxide, although the average ore is not nearly as rich.

Carnotite is a yellow mineral consisting mainly of potassium uranyl vanadate but containing also small amounts of barium and calcium compounds. Being a uranium mineral as is pitchblende it of necessity carries radium, although it has not yet been definitely established that the uranium and radium are in equilibrium as they are in pitchblende. However, it is known that in our Western carnotite the amount of radium is not far from the equilibrium ratio and in calculations given above an allowance of 10 per cent. has been made to cover this possible deficiency. While carnotite is known to occur in smaller quantities in other states, the more important deposits are scattered over a considerable area in Colorado and Utah, embracing Meeker and Skull Creek, Colo., Green River, Thompson's Moab, Richardson, Table Mountain, Pahreah, and other places in Utah. The largest proportion of the ore, however, has been produced in or around Paradox Valley in southwest Colorado from which it has to stand long hauls by pack animal or wagon to the railroad. Carnotite always carries vanadium as well as uranium and radium, but is purchased almost wholly on its radium content comparatively little being allowed for the vanadium present.

The ore consisting of a fine grained sandstone containing yellow finely pulverulent carnotite occurs in pockets and is easily mined. As ore below 2 per cent. uranium oxide cannot at the present time find a market, a considerable portion of the ore has been thrown on the dump and is now being wasted as material of lower grade has to be discarded on account of the long haul and the fact that European buyers have set this standard as to quality. Ores of higher grade are sometimes obtained but they occur only in small pockets and it is generally advisable to mix these high grade ores with ores of somewhat lower grade in order to increase the marketable output. Ore of 2 per cent. uranium oxide is now worth approximately \$75 per ton. f.o.b. New York.

In the mining of these carnotite ores it is probable that 5 tons of material capable of concentration are thrown upon the dump for every ton that finds its way to market. To develop methods for concentration of these ores and save the valuable material now wasted is one of the problems before the Bureau of Mines with fair prospect of a successful conclusion.

It is difficult to estimate the total amount of radium that has been produced up to the present time, but it is quite certain that if the ores which have been mined in this country and abroad and sold for radium production have been actually worked up into this material there is now in existence something like 40 gram (1 1-4 ounces) of radium. The price of radium salts varies somewhat. In large quantities it has been \$60,000 per gram for both radium chloride and radium bromide, although the latter contains less metallic radium in proportion to its weight than the former. It should be remembered, therefore, that it is more advantageous to purchase radium chloride than radium bromide. In small quantities the average price has been \$80,000 per gram, which represents about \$2,250,000 an ounce.

The figures given show very plainly that the United States has taken the palm from Austria as the radium producing country of the world. Very few people have been cognizant of the fact that the United States has such deposits within her borders. Up to the present time very little interest has been taken in the matter, and only one firm has engaged in the extraction and refining of radium in this country—a condition which is deplorable. This firm has not yet entered the radium market.

Practically every ton of ore mined in 1912 went abroad, and as the American deposits are far from being inexhaustible we are rapidly depleting our own reserve and are shipping from the country material of great value and of unknown possibilities which cannot be replaced.

The applications of radium are still too little understood to admit of definite statement. Its discovery and marvelous properties have already changed our ideas regarding the constitution of matter and scientific investigation will undoubtedly lead to valuable results which we cannot now even foresee. Altogether too many incorrect statements and vague speculations have been placed before the public as to its use in medicine. A recent report of the London Radium Institute and the many articles emanating from minor laboratories experimenting in the application of radium to therapeutics all tend to show, however, that it has a real value, the certain application of which must await further experimentation. In the meantime no credence should be given to the many stories that are sure to be printed unless they are backed up by the highest medical authority, which will always give publicity with caution.

The best medical authorities appear to agree that up to the present time radium has not been proved to be specific for any disease, although it has been shown to be helpful in many cases, and the outlook for its future application to certain diseases not easily treated otherwise is decidedly encouraging.

Apparently no uranium is worked up in the United States, but according to statistics gathered by the division of mineral resources of the U. S. Geological Survey about \$14,000 worth of its oxides and salts were imported into the United States in 1911. It is one of the few materials shipped abroad as ore and returned in manufactured form.

A preliminary report on uranium, radium and vanadium by R. B. Moore and K. L. Kithil will soon be issued by the Bureau of Mines. This bulletin describes the carnotite deposits of Colorado and Utah and the pitchblende deposits of the former State. It also contains detail of which the foregoing is simply a general summary which cannot fail to be of value to all those interested in our mineral resources and their development.

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UNIVERSITY OF WASHINGTON— COLLEGE OF MINES

The annual spring inspection trip of the College of Mines was this year held in the western part of the State of Washington during the week April 5 to 14. Sixteen members made up the party, including Dean Roberts, Professor Daniels and Professor Corey. Camp No. 2 to the city water supply at Cedar Falls was first visited. Here rock tunneling, diamond and chilled shot drilling, gravel washing, concrete masonry work, aerial tram and cable-way operation were studied. The party next visited the new Milwaukee tunnel at the summit of the Cascades. Various methods employed in driving the headings, benches, stopes and timbering, methods of disposal of rock and the power plant and shops were all visited. From this point the party traveled to Cle-Elum, Washington, for a four days' stay, visiting the various coal mines of the Northwestern Improvement Company, the Roslyn-Cascade Coal Company, and the Roslyn Fuel Company in the Roslyn district. Time was divided between underground and surface work. The various systems of mining and drawing coal, transportation methods, ventilation and pumping, as well as the surface equipment and power arrangements were thoroughly gone over. Leaving Cle-Elum the party drove to Liberty, a former prosperous placer camp, 20 miles east of Cle-Elum. Here the various methods of drift mining were studied in detail. Recent lode development in the camp came in for a share of attention in the study of the prospects and deposits opened up by tunnel and shaft. A small stamp mill recently installed gave opportunity for study of the milling processes.

On the trip Dean Roberts gave several illustrated lectures at the different camps on the subject of "Gold Dredging," and Professor Daniels on "Recent Coal Mining Machinery and Appliances."

In London it is stated that a process has been discovered for converting iron ore of any grade, even sands now quite useless, (of which hundreds of millions of tons exist ready for working) into steel of excellent quality without the aid of a blast furnace, the steel being produced direct in a single operation. Tests have already been made of the steel so produced and the results obtained are remarkable.

PERSONAL AND GENERAL

Movements and News of Prominent Mining Men.

Written for the B.C. Mining Exchange by E. Jacobs

Mr. A. W. Allen, secretary of the Lucky Jim Zinc Mines, Ltd., proceeded from Victoria to Kaslo, Kootenay lake, at the end of April, to attend the annual meeting of the company called for May 1 at that place.

Mr. L. K. Armstrong, of Spokane, Washington, editor of the "Northwest Mining News," and secretary of the Spokane Local Section of the American Mining Institute, has been in correspondence with the secretary of the Western branch of the Canadian Mining Institute, relative to the joint meeting of the two organizations to be held in Rossland in May.

Mr. George H. Aylard, now of Victoria, under whose supervision the Standard silver-lead mine, in Four-Mile camp, Slocan Lake district, was developed from a mere prospect to an important ore-producer, is spending a few weeks at Silverton and New Denver, within a few miles of the Standard.

Mr. Melbourne Bailey, for years actively engaged in placer-gold mining on a large scale in Cariboo, has arranged to return to that district for the ensuing hydraulic season, after having spent the winter at his home in Tacoma, Washington.

Mr. H. C. Bellinger, general manager of the Great Cobar Ltd., left San Francisco, California, on May 6 by the s.s. Ventura on his return to Cobar, New South Wales, Australia. In its April number, the "Mining Magazine," London, England, said editorially: "Owing to the interruption to smelting during the Easter holidays the March returns from Great Cobar are disappointing. So was the special meeting, called to enable Mr. H. C. Bellinger to address the shareholders. He explained the difficulty of obtaining an adequate supply of labor, and confirmed the estimates previously made, but gave no fresh information. In his reticence he was wise. Great Cobar has had enough said and promised about it, and if the performance has repeatedly fallen short of the promise, it is only fair to say that Mr. Bellinger deserves more sympathy than blame. He has proved his technical skill abundantly, and, so it seems to us, also his patience and loyalty, for no mine manager during the last three years has had to face repeatedly so many difficulties, due to no fault of his own. The labor troubles at Great Cobar would have broken the spirit of any ordinary man. We shall be glad to chronicle the success of the enterprise for his sake, as well as that of the proprietors." Mr. Bellinger's many friends in British Columbia will gladly "second the motion."

Mr. T. Walter Beam, of Denver, Colorado, has bonded a number of mineral

claims situated in Hedley camp, Similkameen, and has arranged to extensively prospect the ground with diamond drills. The exploration work will be done under the immediate supervision of Mr. Gomer P. Jones, general superintendent for the Hedley Gold Mining Company.

Mr. Wm. Blakemore, of Victoria, editor of "The Week," now includes in that publication a mining column edited by himself.

Mr. D. C. Botting, of Seattle, Washington, State Inspector of Coal Mines, though unable to himself attend the meeting of the Western branch of the Canadian Mining Institute held at Nainaimo last month, was instrumental in inducing Mr. J. F. Menzies, of Roslyn, Washington, general superintendent of the Northwestern Improvement Co.'s Coal Department, to go in his stead and read a paper there.

Mr. G. O. Buchanan, Dominion Supervisor of Lead Bounties, has lately been fully occupied in obtaining returns of lead mined and smelted in British Columbia during the latter part of the fiscal year ended March 31.

Mr. W. A. Cameron, superintendent of the Consolidated Mining and Smelting Company's Richmond-Eureka mine, has returned to Sandom, Slocan, from a trip to the Coast cities, and now that danger from snowslides has passed, has resumed work at that mine.

Mr. L. A. Campbell, of Rossland, general manager for the West Kootenay Power and Light Company, who represents the Rossland constituency in the Provincial Legislative Assembly, and is chairman of the Mining Committee of that body, was last month entertained at a complimentary smoker at Rossland on his return to that city after the close of the recent session.

Mr. W. A. Carlyle, who in the nineties was actively associated with mining in British Columbia, and later was general manager of the Rio Tinto copper mines in Spain, has resigned the professorship of metallurgy in the Royal School of Mines, London. His resignation is to take effect in June, after which he will resume practice as a consulting engineer, entering into partnership with Mr. John F. Allan, a well-known consulting engineer, who, besides important consulting connections, has been in the service at different periods, in a managerial capacity, of the Rio Tinto Co., Mexican G. and S. Recovery Co., and Caucasus Copper Company.

Mr. C. E. Cartwright of Vancouver, on April 14 read a paper on "The Mining Outlook in British Columbia," at a meeting of the Vancouver branch of the Canadian Society of Civil Engineers.

Mr. A. B. Clabon of Vancouver, who with Mr. Fred M. Wells, has been actively associated during the last year or more with the development of the property on Princess Royal island of the Surf Inlet Gold Mines Company, is reported to be arranging for a resumption of work on the Kingston property, in Hedley camp, Similkameen.

Mr. M. S. Davys, managing director for the Silverton Mines, Limited, and Mr. G. Stilwell, the company's superintendent, have succeeded in overcoming the obstacles to ore-production that since the destruction of the Wakefield mill and the lower terminal of the aerial tramway by fire last June had prevented ore from being sent out from the company's Hewitt-Lorna Doone mines. The new concentration plant, which includes provision for the minerals separation flotation process, is now being operated.

Mr. W. B. Dornberg, of Spokane, Washington, manager for the Treasure Mountain Silver-Lead Co., which is developing a promising silver-lead property, situated in Tulameen district and distant from Otter flat about 20 miles, has been spending a week in Victoria.

Mr. Howard W. DuBois, of Philadelphia, Pennsylvania, managing director of the Quesnelle Hydraulic Gold Mining Company, is making preparations for the ensuing gravel-washing season's hydraulic operations at the company's placer-gold mine in Quesnel mining division, Cariboo district. Mr. DuBois gave the annual meeting of the Canadian Mining Institute, held at Ottawa last March, an interesting account of what his company had done in Cariboo, and showed a number of lantern-slides illustrative of its work.

Mr. W. E. Finch, of Spokane, Washington, manager for a syndicate that is developing several mines in Slocan district, under option of purchase, lately spent several days in Victoria.

Mr. S. S. Fowler, of Riondel, Kootenay lake, general manager for the New Canadian Metal Co., operating the Bluebell lead mine and concentrating plant, spent several days in Victoria and Vancouver about the middle of April.

Mr. Francis Glover, formerly employed at the Extension colliery of the Canadian Collieries (Dunsmuir), Limited, near Ladysmith, Vancouver island, has been appointed superintendent for the Princeton Coal and Land Co., operating a coal mine at Princeton, Similkameen, in succession to Mr. James Holden, resigned.

Mr. J. P. Graves, vice-president and general manager for the Granby Consolidated Mining, Smelting and Power Company, Ltd., has returned to his headquarters in Spokane, Washington, after having spent the winter in Southern California.

Mr. S. W. Hall, of Butte, Montana, who is superintending the development of a part of the holdings in that camp of the Butte-Duluth Company, which has come into some prominence lately in connection with the claim that nearly pure metallic copper is being produced by a leaching and electrolytic refining process in use by that company and the Bullwhacker, operating in the same

district, was formerly managing mines at Rossland. He is a son of the late Mr. W. E. Hall, formerly manager of the Le Roi, Rossland, who came to his death in January, 1908, by falling down one of the shafts of that mine.

Mr. C. Hanckel, formerly with the Zinc Corporation, who for about a year had been advising the Silverton Mines, Ltd., in connection with the designing of a concentrating plant to treat silver-zinc ore from its Hewitt-Lorna Doone mines, in Silverton camp, near Slocan lake, and the erection and equipment of a concentrating mill, has left British Columbia on his return to England.

Mr. J. M. Harris, of Sandon, Slocan, well-known as one of the principals in the long-drawn-out litigation between the Star and Byron White companies, involving extra lateral rights, has lately been visiting the Panama Canal.

Mr. W. S. Haskins, who some years ago was connected with mines in Rossland camp, has latterly been engaged in developing mineral claims in the vicinity of Hazelton, Skeena River district.

Mr. Lionel Hill, assistant to the manager of the mines of the Le Roi No. 2, Ltd., at Rossland, has left British Columbia on a three months' trip to England.

Mr. John Hopp has returned from a business trip to Eastern Canadian and United States cities. As the hydraulic season is approaching he will shortly prepare for operations. The snowfall having been heavy during the winter of 1912-1913, a long and profitable gravel-washing run is expected this year. Mr. Hopp has four or five hydraulic placer-gold mines, situated within a few miles of Barkerville, Cariboo district, including leases on the famous Williams creek, and on tributaries of the equally well-known Lightning creek.

Mr. P. F. Horton, superintendent of the H. B. mine, on Deer creek, near Salmo, Nelson mining division, has been spending a month in Victoria and other Coast cities. With the breaking up of the snow roads and the unfavorable conditions for heavy hauling in spring, shipment of ore has had to be temporarily suspended, but as soon as the wagon road shall be hard enough, freighting will be resumed. The output of the H. B. mine, which ships lead ore to Trail is now about 1000 tons a month.

Mr. R. A. A. Johnston, mineralogist of the Geological Survey of Canada, Ottawa, Ontario, who has been on a vacation, spent a few days in Victoria in the course of his holiday wanderings.

Mr. Oscar Lachmund, of Greenwood, general manager for the British Columbia Copper Company, last month visited Princess and Voigt's camps, Copper mountain, Similkameen. He was accompanied by Mr. Frederic Keffer, the company engineer and geologist.

Prof. Arthur Lakes, of Denver, Colorado, U. S. A., a well-known contributor to various mining journals, is now resident in the vicinity of Ymir, Nelson mining division, with his son, Arthur Lakes, Jun., who is manager of the Wilcox mine in Ymir camp.

Mr. H. M. Lancaster, who ten or twelve years ago was engaged in mining engineering work in Rossland camp, and who since 1903 has been connected with mining in the States of Idaho, Montana, and Washington, has returned to Rossland to again give his attention to mining in British Columbia.

Captain J. Edwards Leckie, formerly of Cobalt, Ontario, but now of Vancouver, recently gave an address before the local Chamber of Mines on "Cobalt and Northern Ontario."

Mr. Douglas C. Livingston, associate professor of mining engineering at the University of Idaho, Moscow, Idaho, has been examining the Center Star property, Elk City, Idaho, which mine is under bond to Pittsburgh, Pennsylvania, capitalists. Professor Livingston is a son of the late Mr. Clermont Livingston, of Duncan, Vancouver island.

Mr. Thos. J. Lloyd, underground superintendent at the Van-Roi mine, in Silverton camp, Slocan, has given the Consolidated Mining and Smelting Company of Canada a bond on a group of mineral claims situated near Four-mile creek, Slocan Lake district.

Sir Richard McBride, Premier and Minister of Mines of British Columbia, on the occasion of his responding to an invitation to deliver a Charter Day address at the University of California, received the honorary degree of doctor of laws.

Prof. R. S. McCaffery, of Moscow, Idaho, professor of mining engineering, University of Idaho, in his capacity of chairman of the Spokane local section of the American Institute of Mining Engineers, is interesting himself in promoting the success of the joint meeting of the section with the western branch of the Canadian Mining Institute, to be held at Rossland on May 22-23.

Mr. C. H. McDougall, superintendent of the Consolidated Mining and Smelting Company's St. Eugene and Sullivan mines, in East Kootenay, has recovered after having been ill in the Kootenay Lake hospital at Nelson.

Mr. Alfred McMillan has returned to Northport, Washington, from a stay at the Haleyon Hot Springs, Arrow lake, B. C. He is in charge of the smelting works at Northport and other property of the Le Roi Mining Company in liquidation.

Mr. Duncan McIntosh, of Greenwood, Boundary district, long connected with the development of mining properties in that district, has lately been in Vancouver and Victoria for several weeks.

Mr. Robert McKee, after whom McKee creek, in Atlin camp, was named, was reported in Coast newspapers to have been in Seattle early in April with about \$400 worth of placer-gold from the Silver Creek diggings, situated in the northeastern part of Atlin mining division. Many placer claims have been staked on Silver and other creeks south of Teslin lake, during the winter, and it is hoped much work will be done this spring to test the value of the new diggings.

Major Ainsley Megraw, of Hedley, Similkameen, editor of the Hedley Ga-

zette, has done good service to the mining industry of Hedley camp by exposing the discreditable career of one C. H. Brooks, who had commenced a campaign of unscrupulous advertising in the city of Vancouver with the manifest intention of obtaining money from the public, professedly for the development of a mining property near Hedley. Mr. Brooks has since left British Columbia.

Mr. J. W. D. Moodie, vice-president and general manager of the Britannia Mining and Smelting Co., is busily engaged in pushing forward the work of extensive further development of the company's copper-mining property on Britannia mountain, and its concentrating plant at Britannia Beach, also on Howe sound.

Mr. I. M. Merrill, president of the Hedley Gold Mining Company, recently paid one of his periodical visits to that company's gold mine and 40-stamp mill in Hedley camp, Similkameen.

Mr. Wm. H. Nichols, of New York, president of the Granby Consolidated M. S. and P. Co., has gone to Europe on a two months' vacation.

Mr. W. G. Norrie, of Bear lake, Slocan, superintendent for the Lucky Jim Zinc Mines, Ltd., after a particularly hard winter's experience, owing to the frequent recurrence of snowslides, has at length succeeded in resuming shipment of zinc ore from the Lucky Jim mine to the United States, railway communication having been re-established.

Mr. J. L. Parker, formerly manager for the Pacific Metal Mines Company, of Vancouver, is now manager of a coal mine near Diamond City, in the Lethbridge district, Alberta.

Mr. Fred S. Peters, of Rossland, superintendent of the Le Roi mine, has been in the hospital in that city for treatment during illness.

Mr. M. E. Purcell, superintendent of the Consolidated Mining and Smelting Company of Canada's Centre Star group of mines, has returned to Rossland after having attended the annual meeting of the Canadian Mining Institute at Ottawa in March, as representative of the Western branch of the Institute, of which he is chairman. Mr. Purcell also went to Montreal, New York, and Washington, and returned to British Columbia via Buffalo and Niagara Falls, and thence by Toronto over the C. P. R. transcontinental line.

Mr. A. E. Rand, of New Westminster, has been visiting Los Angeles, California, where he met Mr. Thos. Kiddie, metallurgist, formerly of Vancouver. Mr. Rand is largely interested in mining properties in Nelson mining division, including a large group of mineral claims within a few miles of the town of Nelson, and the Sundee property in Ymlr camp.

Mr. T. A. Rickard, of London, editor of "The Mining Magazine," has been elected a corresponding member of The Canadian Mining Institute.

Mr. Wm. Fleet Robertson, of Victoria, provincial mineralogist for B. C., has returned to his headquarters in the capital of the Province, after having at-

tended the meetings in Ottawa of the International Geological Congress organization committee and The Canadian Mining Institute. Before returning West he also visited New York.

Mr. Hallett R. Robbins, at one time engaged in development work on a group of mineral claims, situated in Hedley camp, Similkameen, and afterward practising as a mining engineer with office in Seattle, Washington, is now assistant professor of metallurgy at the State College of Washington, Pullman, Washington, in succession to the late Mr. Roswell E. Sampson, who was accidentally killed by being run over by a railway train.

Mr. J. M. Ruffner, manager of the North Columbia Gold Mining Company, lic placer-gold mines in Atlin camp, has which is the largest operator of hydraulic returned to the scene of his operations after having spent the latter part of the winter at his home in Cincinnati, Ohio.

Mr. Thos. Russell, for about 20 years actively connected with the management of coal mines on Vancouver island, and who last year resigned as manager of the Extension colliery of the Canadian Collieries (Dunsmuir) Limited, is now practising as a consulting coal-mining engineer, with headquarters in Vancouver.

Mr. E. C. Semmens, who has had a lengthy gold-mill experience in Western Australia and West Africa, has been appointed to charge of the 10-stamp mill on Cadwallader creek, Lillooet district, of the Coronation Gold Mines, Ltd. The company two years ago acquired the Ben d'Or gold mine and mill, and other mining property in the vicinity and since then has done much underground development with promising results, so, with sufficient ore developed for stoping, the mill is to be operated this season. Mr. C. L. Copp is the company's manager.

Mr. Sam Silverman, now of Spokane, Washington, who in the nineties was interested in mining properties in Kootenay district of British Columbia, and later operated a copper-mine on Prince of Wales island, Alaska, recently accompanied Mr. James Cronin, manager of the Standard silver-lead mine, to that property, which is situated near Silverton, Slocan lake. The party also included two visitors from Salt Lake City, Utah, U. S. A.

Mr. Alexander Smith, of New Denver, Slocan lake, one of the owners and manager of the Surprise silver-lead mine, on the divide between Cody and McGuigan basin, Slocan, spent the latter part of the winter in Vancouver. After several years' persistent development work, the Surprise is now sufficiently opened to commence the shipment of ore to the smelter as soon as it shall be practicable to haul heavy loads to the railway at Sandon.

Mr. O. B. Smith, general mining superintendent for the Granby Consolidated M. S. and P. Co., has returned to Vancouver from a trip to Boston and New York. With him on his journey westward was Mr. R. P. Williams, over a long period Western representative of the Ingersoll and Canadian Rand

companies, who has also been East.

Mr. Thos. R. Stockett, of Nanaimo, manager for the Western Fuel Co., is being heartily congratulated on the satisfactory results achieved at the new Reserve Shaft mine the company has opened near the mouth of Nanaimo river, between four and five miles from the shipping docks at Nanaimo. Coal has been entered at a depth of 1046 ft., and the seam is reported to be 10 ft. in thickness of coal of excellent quality.

Mr. W. J. Sutton, of Victoria, has been nominated for election as chairman of the Western Branch of the Canadian Mining Institute for the ensuing year, to May 1914. It will be particularly appropriate for the branch to have as its chairman at the time of the visit to British Columbia of excursion parties of the International Geological Congress, a geologist so well informed and favorably known as is Mr. Sutton.

Mr. F. M. Sylvester, of Spokane, Washington, assistant to the general manager of the Granby Consolidated M. S. and P. Company, lately spent a week or two in the Coast cities of Vancouver and Victoria.

Professor Francis A. Thomson, head of the mining engineering department of the State College of Washington, Pullman, Washington, U. S. A., was in Victoria during the Easter vacation.

Prof. Charles E. van Barneveld, recently appointed chief of the mining department of the Panama-Pacific Exposition, is professor of mining engineering at the University of Minnesota, Minneapolis, Minn. He is a McGill University graduate. The Engineering and Mining Journal says: Professor Van Barneveld is the Dean of the School of Mines of the University of Minnesota. He is preparing to take up the Exposition work immediately. He held a position in the University of Minnesota for 14 years, and during that period travelled extensively in behalf of the university. For six earlier years he was engaged in practical mining, in the southwestern states and in Mexico. He is the author of "Iron Mining in Minnesota." He was formerly a resident of California and is a land owner in the Sacramento and San Joaquin valleys. The mining building to be erected at the Exposition will occupy an area of 350,000 sq. ft. It is proposed to make the exhibit greater than that of any previous exposition.

Mr. E. E. Ward, of Ainsworth camp, superintendent of the Silver Hoard mine, recently had an unpleasant experience. While he was going up from Kootenay lake in one of the buckets of the No. 1 aerial tramway something went wrong and the cable stopped running. Hung up during a snowstorm, Mr. Ward was in a predicament until a miner climbed one of the towers and threw him a rope, by means of which he lowered himself to the ground.

Mr. W. J. Watson, of Ladysmith, Vancouver island, manager for the Tyee Copper Company, has gone to England to confer with the directors of the company relative to the future of the company's smelting works at Ladysmith.

(Concluded on page 25.)

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EDITORIAL.

The returns from the first shipment of ore from the Harris mines at Hazelton, which we publish in another column, make very satisfactory reading indeed. It has been the pleasant duty of the B. C. Mining Exchange to frequently call attention editorially to the marked progress in development work which has been taking place in the mining district around New Hazelton during the past few years, and to express the opinion that it merely needed the advent of the necessary transportation facilities which the railway would bring, when completed, into the district, to take a very prominent place among the mineral-producing camps of British Columbia. That this point of view was correct is amply evidenced by the returns on the Harris shipment. As is justly pointed out by our contemporary, the Omineca Herald, these returns do not merely place the Harris mines in the high grade class, but place the whole camp in the high grade class. It is difficult to estimate the immense effect this showing will have on the development of the mining industry in this northern section of the province, which, as yet but little prospected, and scantily populated, has nevertheless made good in so striking a

manner on the work already undertaken; but it is safe to say that such effect will be of a most far-reaching and beneficial character. The advent of the railroad has solved the one great obstacle to the successful development of the vast mineral wealth already known to exist in the northern part of the province; it has also given a stimulus to prospecting which, beyond all shadow of a doubt, will result in the discovery and opening of still other mineral areas to add their quota of wealth to those now beginning to yield up their treasures. The prospect for the mining industry in Northern British Columbia is a very bright one indeed. Our hearty congratulations to the Messrs. Harris as successful pioneer ore shippers of the district.

The mines in the Portland Canal district, from information available, are feeling the good effects of the enterprising work being carried on by the Portland Canal Tunnels, Limited. While the direct influence of this company's operations is confined to the Bear River Valley, the mere fact that so large and important an undertaking is being rapidly pushed to a successful conclusion in the confines of the camp, has had a most timely and bracing effect upon mining development throughout the district. We expect to have some interesting particulars on this subject at an early date.

Reliable information to hand is that the management of the Coronation Mines at Lillooet expect to start crushing ore early in June. The property is showing up excellently with development, and good promise is also given by the Blackbird and other adjacent groups. The establishment of a successful free-milling gold camp in Lillooet district would appear to be an assured fact in the very near future, with results that will be of the greatest importance, not merely to the district itself, but to the whole province as well.

The Hon. Richard McBride, Premier of British Columbia and Minister of Mines in the Provincial Cabinet, has again given the public a proof that he is not a man to be swayed by foolish sentiment or popular clamour when the object thus sought is contrary to the welfare of the community. His reply to the advocates of female suffrage, given in the House the other day, conveyed not merely a courteous refusal to accede to a reactionary and disastrous legislative experiment, but also a dignified rebuke to a class of women—and their semi-male

supporters—who have already brought the administration of justice into contempt in England, and who imagine that they will get a free hand to carry on their criminal antics in Canada. The mere fact that the application of these females was fathered and endorsed in the House by the two Socialist members was sufficient to condemn it in the eyes of all right-thinking men; while the additional fact that one at least of the said two members uttered a thinly-veiled threat as to what might happen if the suffrage were not given to the "wild women" indicated very plainly the need for prompt and firm dealing. It is fortunate for British Columbia that, in Sir Richard McBride, she has a Premier who is not afraid to nip in the bud such attempts at freak legislation.

In another column we print an extract from the Mexican Herald, deploring present conditions in Mexico, and lamenting the policy which removed the reins of power from Senor Porfirio Diaz. We do not wish to seem unkind, but, if our contemporary had taken the same bold stand before the criminal blunder of revolt against the Diaz administration was accomplished, matters might have turned out a little differently. It is no secret who were the forces behind the movement which sent down the only capable administration Mexico has had since 1820—and they were not Mexican forces. It seems a hard thing to say, but it is difficult to believe that the Mexican Herald was ignorant of a sordid commercial conspiracy, whose progress and growth had been watched with contemptuous interest by every student of international politics for months before it flowered into the crime which has sunk Mexico into a welter of poverty and bloodshed.

THE NEW SLOGAN.

From the Chicago Tribune.

It used to be "St. George and Merrie England."

Now it's Lloyd George and Merrie Hell.

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LATEST METAL MARKETS.

(From Chicago Mining and Engineering World.)

Silver.—The trend of prices for bar silver during the past week and longer has been upward. The closing price last week was 60½ cts. at New York and 27 13-16d at London.

Quotations for silver per fine ounce at New York and per standard ounce at London for the week ending April 30, were as follows:

	New York Cents	London Pence
April 24	60½	27½
" 24	60½	27 13-16
" 26	60½	27 13-16
" 28	60½	28 1-16
" 29	60½	27 15-16
" 30	60½	27 15-16

MONTHLY AVERAGE PRICES OF SILVER

	New York			1912
Month.	1913	1913	1913	Avg.
	High.	Low.	Avg.	
January	63½	61½	62.928	56.259
February	62½	58½	61.625	59.043
March	59½	56½	57.969	58.360
April	60½	57½	59.540	59.265
May				60.754
June				61.265
July				60.615
August				61.600
September				63.364
October				63.504
November				62.750
December				63.390

Year

Copper.—Last week's copper market was strong and the buying movement continued. Consumers bought extensively of electrolytic for April deliveries, and in May and June at 15¼ cts. per pound, and also contracted heavily for casting for similar deliveries at 15½ cts. per pound.

Spot warrants declined £1 to £67 15s in London within the week, while futures made a net loss of £1 3s 9d. Best selected brands have been marked down £1 to £74. In the New York Metal Exchange, spot warrants declined from 15.12½ to 14.87½ cts., bid, and from 15.62½ to 15.37½ cts., asked.

Reports place the exports for last week as 12,690 tons, increasing the total so far this month to 30,960 tons and making the total since March 1 73,388 tons, a large exportation, and greatly in excess of European consumption. When the foreign market is active shipments from New York average about 25,000 tons a month. It is assumed that Europe is being over-burdened with the present exports and that this is a prime factor in holding down prices there.

Quotations for copper per pound at New York and per long ton of 2240 lbs. at London for the week ending April 30, were as follows:

	Lake	Elec.	Cast	Standard London
Apr. 24	15½	15½	15½	£67 0 0
" 25	15½	15½	15½	67 15 0
" 26	15½	15½	15½	67 15 0
" 28	15½	15½	15½	67 7 6
" 29	15½	15½	15½	67 2 6
" 30	15½	15½	15½	67 2 6

MONTHLY AVERAGE PRICES OF COPPER

	New York—Lake Superior			
Month.	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	18	16½	17.116	14.526
February	16½	15½	15	14.606
March	15½	15½	15.306	14.911
April	15½	16½	16.731	16.092
May				16.891
June				17.612
July				17.536
August				17.694
September				17.724
October				17.753
November				17.750
December				17.760

Year

	New York—Electrolytic.			
Month.	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	17½	16½	16.983	14.425
February	16½	15	15.717	14.435
March				14.853
April				16.003
May				16.326
June				17.505
July				17.418
August				17.694
September				17.706
October				17.745
November				17.750
December				17.760

Year

Tin.—The tin market was dull during the early part of last week, but greater activity developed toward the close. In London spot contracts were quoted as low as £225 per ton on Thursday, which was fully £5 under the opening figure. Prices recovered late in the week on covering by shorts, and the undertone was fairly steady. In the local trade business put through was chiefly for nearby deliveries. It is reported that a large short interest was still outstanding. Spot tin was held at 49¼ cts. in the open market, with the foreign interests asking 50 cts.

Offerings of tin in London at the close were light and prices ruled firm. Demand from customers was comparatively small. Spot standard contracts closed at £228 per ton, with three-month shipments held at £222 10s, a net decline of £2 10s, and £3 5s, respectively.

Quotations for tin at New York and at London for the week ending April 30, were as follows:

	New York	London
Apr. 24	49.25—48.37½	£226 0 0—221 5 0
" 25	50.00—49.6¼	228 0 0—222 10 0
" 26	49.75—49.50	228 0 0—222 10 0
" 28	49.75—49.25	227 10 0—221 10 0
" 29	49.80—49.50	229 0 0—220 0 0
" 30	49.75—49.62½	230 10 0—220 5 0

MONTHLY AVERAGE PRICES OF TIN

	NEW YORK.			
Month.	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	51.25	49.50	50.414	43.275
February	50.30	47.30	48.738	43.345
March	48.50	45.62½	46.844	42.690
April	50.25	47.37½	49.075	43.970
May				45.055
June				48.046
July				44.665
August				45.849
September				49.232
October				50.073
November				49.869
December				49.899

Year

Lead.—The lead market was higher last week, following the advance in prices by the leading interest. On the New York Metal Exchange at the close 4.45 cts. was bid for spot, April and May with 4.50 cts. asked; June was quoted at 4.45 cts. bid and 4.55 cts. asked. For East St. Louis delivery spot and April were offered at 4.45 cts., with 4.35 cts. bid; May was offered at 4.45 cts., and

June at 4.47½ cts., with 4.37½ cts. and 4.40 cts. bid, respectively.

At London soft Spanish lead closed at £18, and English at £18 12 6d.

Quotations for lead at New York and London for the week ending April 30, were as follows:

	New York Cts. per lb.	London Per Ton
Apr. 24	4.45	£18 2 6
" 25	4.45	18 0 0
" 26	4.45	18 0 0
" 28	4.45	17 17 0
" 29	4.45	17 15 0
" 30	4.45	17 2 6

MONTHLY AVERAGE PRICES OF LEAD

	New York			
Month.	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	4.37½	4.25	4.301	4.435
February	4.35	4.25	4.30	4.068
March	4.40	4.25	4.340	4.167
April	4.45	4.30	4.381	4.213
May				4.161
June				4.395
July				4.669
August				4.581
September				5.071
October				5.088
November				4.633
December				4.300

Year

Spelter.—The New York spelter market was dull all last week. There was no demand and prices became easier. At the close nominal prices were: Spot and April 5.55 cts. bid, 5.65 cts. asked; May 5.55 cts. bid, 5.60 cts. asked; June and July 5.55 cts. bid, 5½ cts. asked. At the close East St. Louis delivery was as follows: Spot, April and May, 5.40 cts. bid and 5.50 cts. asked; June and July, 5.40 cts. bid, 5.47½ cts. asked.

At the close the London market was quoted steady at £25 10s.

Spelter quotations at New York and London for the week ending April 30, were as follows:

	New York Cts. per lb.	London Per Ton
Apr. 24	5.65—5.55	£25 10 0
" 25	5.55—5.45	25 10 0
" 26	5.65—5.55	25 10 0
" 28	5.65—5.55	25 10 0
" 29	5.60—5.60	25 10 0
" 30	5.55—5.60	25 10 0

MONTHLY AVERAGE PRICES OF SPELTER

	New York				London.			
Month.	1913	1913	1913	1912	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.	High.	Low.	Avg.	Avg.
Jan. 7.40	6.40	7.192	6.505	26.115	26.721			
Feb. 6.80	6.15	6.406	6.541	25.385	26.457			
Mar. 6.45	5.70	6.222	6.817	24.130	26.035			
Apr. 5.95	5.45	5.712	6.799	25.305	26.646			
May			6.85		25.520			
June			7.011		25.765			
July			7.229		26.173			
Aug.			7.042		26.434			
Sept.			7.553		27.067			
Oct.			7.650		27.551			
Nov.			7.429		26.766			
Dec.			7.331		26.880			

Year

A BLIND GUIDE.

Says the Nelson News of the 19th Inst.:

Rev. J. A. McDonald, editor of The Toronto Globe and the man who introduced Reciprocity to Sir Wilfrid Laurier, to the latter's undoing, has been in Ottawa for some weeks advising and pleading with the Opposition to continue the fight against the government's naval proposals and latterly the adoption of closure. Probably by this time some of the Opposition members have come to a realization of the fact that Mr. McDonald's advice on political matters generally leads to disaster.

Coast and Island Mining

Progress at Portland Canal—Rapid Advance of Work of Portland Canal Tunnels, Ltd.,—Salmon River Looking Well—Activity at Hidden Creek—Development at Al-berni—The Western Fuel Co. Busy—The Clayburn Works and their Output—General News of Mines

PROGRESS AT PORTLAND CANAL.

The Portland Canal Miner of the 12th inst. says:

The Miner hopes that owners of mining properties upon which no work is projected this year will see their way clear towards giving leases to some of our local miners. It is well known that in case of certain prospects in the camps the owners have been bombarded with offers from would-be lessees, but nothing has yet been done. It would be invidious to mention any one property in this connection, but our readers can call to mind several prospects in the camp that would give the lessee a very good run for his money.

Portland Tunnels—The face of the tunnel is now at the 820-foot mark. Progress during the week has been inter-

quartz vein, measuring four and one-half feet. Ole Johnson and John Johnson, who are partners with Bruggy and Magee, are doing the work. The property is conveniently located on the Marmot river trail about one and a half miles from the salt chuck. Mr. Magee, who has been spending the winter in Vancouver, writes his partners that he expects to bring back an engineer to sample and report on the property.

DEVELOPMENT COST IN SALMON RIVER CAMPS.

The Portland Canal Miner of the 26th inst. says:

That even severe weather conditions would prove no great hindrance to mining development up the Salmon river,

heretofore prevailed. He points out that packing charges alone last year amounted to \$1.60 per lb., and this for a distance of only 14 miles from tidewater. Even at this figure he contends that the cost of development work per foot in the Salmon River camp is not prohibitive, by any means, and that the winter season places no obstacle for continuous operations.

TO RUSH WORK AT HIDDEN CREEK.

Page Boyles, of the firm of Boyles Bros., of Spokane, whose outfits have been operating on the Granby property here in Phoenix for the past twelve years, returned this week from a visit to his contracts at the Hidden Creek mine, where that important adjunct to



(Courtesy Natural Resources Security Co., Ltd.)
First Passenger Station, G. T. P. Railway, at New Hazelton.

rupted by the break in the flume, four and a half days lost by the accident.

Seven-Mile—Col. R. G. Edwards-Lec-
kie visited the mine last week, and in an interview with the Miner intimated that future development work would depend largely upon the assay results of the samples which were taken by him.

Cascade Falls—Steady progress is being made on the main tunnel of this property, a force of four men being employed. Charles Bunting is in charge.

Indian Mines—George Clothier is engaged in advancing the main tunnel, which will tap the big surface showing at a depth of 150 feet. About 125 feet more drifting is necessary to do this.

Wire Gold Group—The tunnel is now in some 47 feet following a well defined

providing that sufficient supplies are taken in during the late fall to last at least two months during the period of heaviest snowfall, is the statement of Manager Geo. A. Clothier of the Indian Mines, Ltd. As will be remembered development at the property was commenced during March. When Mr. Clothier and his brother went up to the cabin they were several feet under snow and it took them two days to gain an entrance. Work was then resumed in the tunnel. Regarding actual figures for mining work done last season, he says the total cost, including all expenses of operation, was \$16.60 per foot. This, the manager estimates, will be materially reduced on completion of the government pack trail into the heart of the camp, facilitating the transportation of supplies at a much lower cost than has

present day mine development, the diamond drill, is being used with much the same success as that which attends its use here in Phoenix, and where, under Mr. Boyle's personal supervision, upwards of fifty thousand feet of drill holes have been negotiated in determining the extent and value of the ore bodies, says the Phoenix Pioneer of the 5th inst. Queried as to the progress of affairs at Hidden Creek, Mr. Boyles states that he notices an improvement every time he visits the Anyox property. "It is during the coming summer when the big things are expected in and about the new mine," said Mr. Boyles. "As soon as the snow goes operations will be commenced on a scale perhaps never witnessed in the development of any mine in the Dominion." Mr. Boyles also informs us that the preparations provid-

ing for the accommodation of the expected addition to the working force are well under way, while extensive shipments of machinery and other material are in transit. Altogether, according to Mr. Boyles, it would seem as if the company intended to make good its prophecy of the Hidden Creek mine joining the list of shippers some time before the end of the coming summer.

PROGRESS OF ALBERNI.

"A feature in the progress of Alberni during the past year was the erection by the Government of a wharf costing \$5,000. Application has been made for the necessary lights to safeguard shipping on Barclay Sound, Alberni Canal and Harbor." The above is a paragraph from the speech of Mr. James R. Motion, president of the Alberni Board of Trade, at the annual meeting of the board. Mr. Motion outlined the work of the board and the success that attended their efforts.

"A road from Alberni to Central Lake and another from Alberni to Strathcona Park are the results of your labors," he continued. "There is now a good motor road to Central Lake, with hotel accommodation. The completion of this road makes it easier to reach the Big Interior and other mines in that vicinity. A great deal of preliminary work has been carried on in Strathcona Park, and this year a grant of \$150,000 has been made towards further development.

"The choosing of Alberni as the western terminus of the Canadian highway was an important event in the latest year of the history of the city. Railway terminal improvements have facilitated and increased both passenger and freight traffic to and from the city, and it is expected that the Canadian Northern railway will begin this summer the construction of their line northwards from Alberni.

"The board has taken an active interest in the mail service between Alberni and Clayoquot, by way of Bamfield and Ucluelet, and it is pleasing to note that tenders have been called for such a service. A daily mail service between Alberni and Port Alberni has not yet been arranged for, but it is expected in a month's time. A new post office building has become necessary, owing to the large increase of business and population of the city.

"With many incoming people settling on the land, the prospects of agriculture and horticulture for the future are bright. The lumber industry is growing rapidly, a new mill having been built outside the city recently. The West Coast General Hospital, costing from \$15,000 to \$17,000, is nearing completion and will be opened in a few weeks.

"This board is indebted to Mr. H. S. Clements, M.P., and Mr. J. G. C. Wood, M.P.P., for their kindly assistance at all times, and willingness to further the interests of Alberni."

In 19 years the Rossland camp has produced more than \$55,000,000 worth of minerals.

CLAYBURN COMPANY, LIMITED

The favorable nature of the clay and shale deposits owned by the Clayburn Company, Ltd., has been the subject of frequent observation by those interested. There are many other places in different parts of the world where valuable clays occur, but the variety of clays found within a short distance in the hill at the back of the Clayburn Company's works, known as Sumas mountain, is unique. They are among the valuable deposits of the North American continent, and embrace two varieties of fireclay (different results as to refractory quality and hardness being obtained by varying the proportions of each); clays and shales for the manufacture of high-class pressed brick in every shade of grey, buff and red; others suitable for paving-brick, sewer-pipe, terra cotta, and pottery; and, as well, an excellent common clay. Here is in fact clay available for the manufacture of nearly everything which can be made from clay.

It is the intention of the company, as the development of the country warrants, to undertake the installation of the necessary equipment to enter into the manufacture of glazed ware, sewer-pipe, partition-tile, terra cotta and many other lines. For the present, however, the only lines manufactured are common brick, fire brick, pressed brick in all colors, and drain tile, all in considerable quantities. The extent of the industry may be judged from the fact that the net selling price of the output of the plant f.o.b. factory for the year 1912 totalled \$250,000.

During the past year a large amount of important development work has been done at the company's clay pits and mines, which continue to realize the most sanguine expectations. At the manufacturing plant a new continuous kiln for common brick was completed early in the year and has been kept busy ever since. Another rectangular kiln has also been constructed, so that the pressed brick is now burned altogether in this type, with the old beehive kilns used only for fire brick. Large additions have been made to the storing sheds, allowing of bigger stocks being carried under cover. The plant may, therefore, be operated continuously, regardless of market fluctuations, and the more varied stock thus provided makes possible prompt attention to orders. The new common brick plant was completed early in the year, and the whole works has been equipped with electric power, the current being supplied by the Western Canada Power Company. This, in addition to making a considerable saving per diem, has increased by 10 per cent. the output from running. It will thus be seen that everything is being done to bring this plant to the highest state of efficiency and make it one of our most important industries.

The company has also during the year given considerable attention to the problem of housing its employees. Some lots have been sold (only to employees, none to the outside public) on easy terms, upon which men have erected their own homes, thus building up a permanent settlement. The company

has also built a number of additional cottages on land it is retaining. These are neat and substantial, and, of course, built of Clayburn brick.

As shown by the figures quoted above, the market has been good and there is every prospect it will continue to be so. The large number of public and semi-public buildings being erected in our growing cities creates a constant demand for good bricks.

The Clayburn plant has always had fair transportation facilities provided, through connection with the Sumas branch of the Canadian Pacific Railway at Clayburn station. About a year ago connection was also made to the company's siding by the B. C. Electric Railway, so that the facilities are now excellent. The main line of the Canadian Northern Railway has already been constructed and is about two miles distant; if connection shall also be obtained with this system, the shipping facilities will then be so much further improved.

WELCOME HIDDEN CREEK SMELTER.

The news that the Granby Consolidated Mining and Smelting company has sent a representative into the Hazelton district to investigate the lead ore resources of that section is encouraging to all the lead miners of Northern B.C. One of the great drawbacks to mining in this region is the fact that shipment must be made to one of the two smelters namely, Tacoma or Trail. If the ore is sent to Tacoma the heavy duty of 1 1-2 cents per lb. must be paid on the lead contents, while if shipments are made to Trail the ore must face a heavy freight rate on the C.P.R. from Vancouver to the smelter. The lead miner is therefore between the upper and nether millstone, and the establishment of a lead stack at Granby Bay will provide a welcome relief. The chief engineer of the Granby visited the Portland Canal district in 1911, but we do not believe that he visited Salmon river; perhaps it would be welcome if an agent of the company were to make an inspection of the really extensive showings of the Salmon valley, because it is probable that the heavy shipments of the future will come from the lead mines of that section.—Portland Canal Miner.

RECORD OUTPUT

The "Nanaimo Herald" of the 18th inst. says:

Number One mine of the Western Fuel Company made a record output during the month of March which ended yesterday, the total tonnage mined during that period being 40,080 tons.

The previous record was 38,800, but what makes last month's output the more remarkable is the fact the mine worked only 26 days compared with 27 days when the previous high water mark was reached.

The Iron Mask Mine at Kamloops is stated to have been sold to an American company for \$300,000.

WESTERN FUEL COMPANY'S NEW MINE

A press despatch from Nanaimo, Vancouver island, dated April 30, stated that at a depth of 1046 ft. a 10-ft. seam of coal was struck on the previous day in the new Reserve Mine which is being opened by the Western Fuel Company at the mouth of the Nanaimo River near Nanaimo. The coal is of the finest quality, and has all the characteristics of the coal mined years ago from the No. 5 mine, which product was ranked as one of the best on the Pacific Coast.

"While the seam has been uncovered it will yet require several months of hard work before we will be shipping coal from the Reserve Mine," was Manager Stockett's statement. "If everything goes along smoothly we expect to be shipping from this mine 500 tons of coal daily by the end of the year. Everything has been ordered in connection with the surface plant of the new mine, most of the machinery has arrived here, and some of the plant, including the two large hoisting engines, has already been installed."

The two shafts of the Reserve mine are sunk in the centre of a virgin field of 2500 acres, calculated to contain coal sufficient to allow of a production of 1,500 tons for nine hours, will be used years. Manager Stockett expects to have the pithead and other top works completed by July. These will be equipped with the most modern coal-handling devices, as already stated, and by the end of the year the new mine will be in a condition to ship 500 tons a day, and before the end of 1914 will attain a daily output of 1500 tons. The main shaft, which has a capacity of 1500 tons of nine hours, will be used exclusively for the hoisting of coal, the air shaft being utilized for the hoisting and lowering men, timber, rock, waste material, etc. When the new mine shall be fully developed and capable of producing its maximum output the air shaft may be made use of, and in addition to its regular work of handling the men, etc., will be able to hoist 600 tons of coal a day if necessary, bringing the capacity of the Reserve mine up to 2000 tons a day.

The opening of the Reserve mine and improvements to the mines already in operation will represent an expenditure of fully \$1,000,000.

ROCK SALT IN BRITISH COLUMBIA

A press despatch from Prince Rupert, British Columbia, to the Vancouver "Daily Province," dated April 15, follows:

"An extensive bed of rock salt has been discovered at Kwinitsa (Mile 45, on Grand Trunk Pacific Railway) on the Skeena river. For some time it has been known that salt existed at this place, and tests were made by F. H. Moberly, D. Whiteford, and others. A few days ago a solid saltbed was struck by a drilling party.

"So far five holes have been drilled at considerable distances apart, some

more than a mile from others, and all have struck salt at depths varying from 50 to 250 ft.

"At the property Moberly & Whiteford have an up-to-date drilling outfit and have erected a small testing plant, consisting of three evaporating pans.

"Up to the present about eight tons of salt has been secured from the deposits. The most thorough tests show that it is of the best quality.

"The principal salt wells of Canada are situated in Western Ontario. On account of the long rail-haul most of the salt used in British Columbia is imported from California. The presence of valuable salt beds in the immediate vicinity of this city is, therefore, of great importance, especially in connection with the fishing industry on the Coast."

CAPITAL FOR RICHMOND GROUP.

A Rossland despatch of the 17th inst. says:

A telegram was received yesterday by J. L. Warner of the Richmond Consolidated Mining company from Mr. Shaw, the president of the company, saying that he had been successful in interesting eastern capitalists in the Richmond group of the south belt for the purpose of working the property to a larger extent than formerly, and that he was wiring a substantial sum of cash, and that more was on the way by mail. Heavy machinery will be installed immediately, and ore will likely be taken out during the summer, as there is every indication of it getting better as greater depth is attained, there already being plenty in sight.

HIGH ASSAYS FROM SANDON MINE.

Some fine samples of silver-lead ores were recently received by Jas. Marshall from the Dunedin mine, four miles from Sandon, in which property he and another local party are heavily interested. The ore, which plainly shows the footwall, has a width of upwards of four inches and on being assayed gave a return of 231 ounces of silver and 78.06 in lead. Work on the property has been temporarily suspended owing to the danger of snowslides, one of which besides destroying some of the building property at the mine, unfortunately resulted in the death of one of the employees. About a couple of cars of ore have been taken out this winter and will be shipped as soon as the condition of the trail permits.

ESTELLA MINE TO OPEN.

A report from Tracy Creek received on Wednesday, is to the effect that Mr. Alex Paulson of Hoquiam, Wash., owner of the Estella Mine, will be in the district in a few weeks for the purpose of starting up the mine.

The Estella group of mines is located on the North side of Tracy Creek, and is one of the best developed prospects in the district. The main tunnel is about 800 ft. and has been cross-cut at every 100 ft., showing a vein of lead ore from

8 to 12 feet in width. At times the ore runs high in zinc. There is also a lead of gray copper of three feet in width on which a shaft has been sunk to a depth of over 100 feet, this ore runs very high in gold and silver.

The Estella group was located in 1894 by Al. Mutz and Geo. Scott, and was purchased from them by Mr. Paulson. It was bonded to Mr. C. Hungerford Pollen, who spent over \$100,000 in developing the property, then, owing to the low price of lead and the large amount of zinc found in the ore, the deal fell through.

It will be good news to the residents of Wasa and Tracy Creek to know that Mr. Paulson intends to operate the mine.

SANDON RECEIVER APPOINTED.

Mr. Charles W. Young, a well known resident of the Kootenays for some years and formerly chief of police of the City of Nelson, has been named by the government as receiver of the little mountain-girt city of Sandon, the appointment being made on the recommendation of Mr. William Hunter, the member for the district, says the Phoenix Pioneer of the 5th inst. Mr. Young, under his new commission, will be virtually all public officers and offices rolled into one—from mayor and city council to poundkeeper and municipal dog-catcher—with exceptional and unique discretionary powers.

THE STRENGTH OF MATURITY.

The fact that a person is capable of doing the best running and speed walking before the thirtieth year need not lead those who have passed the third decade to think that they are on the down grade of life, says an authority. These exercises call for elasticity of the arteries, and that lessens soon after the thirtieth year, but the powers of endurance increase in the well preserved man or woman up to fifty or fifty-five or even later. Soldiers of fifty are like leather and can perform feats of endurance that would kill the stripling, and the same is true of women.

The "Toronto Globe" of the 16th inst. says: Considerable interest was taken in the sale of fifty shares of Crowsnest Pass Coal Company stock at 62, which is the first transaction in the stock in years. There has been inquiry for the stock for a week or two in anticipation of the favorable showing made in the annual statement announced yesterday, when profits for 1912 of nearly half a million dollars were shown.

Fifty shares of Crowsnest Pass Coal Company stock sold on the Stock Exchange yesterday afternoon at 62. This is the first transaction in the stock on the board in over two years, the last sale being in March, 1911, when a broken lot sold at 70. In view of the favorable report presented at the annual meeting yesterday, and of Mr. Rogers' statement regarding dividend prospects, it is possible that there may be some activity in the stock.

Alaska Oil Refining Company Buys the Oil Lands Lately held by the Amalgamated Development Company, at Katella, Alaska

Within the last few weeks the Alaska Oil & Refining Co. have purchased the oil lands which were lately held by the Amalgamated Development Company at Katalla, Alaska, and are busily engaged in preparing plans for the development of the property. A bond issue of \$400,000, bearing interest at 7 per cent. per annum, is being placed on the market, and no less than \$150,000 of this issue has already been taken up, and the management of the company expect that the balance will be taken up in a very short time, thus providing them with ample funds for energetic development, and enlarged tankage and shipping facilities.

It is proposed to put in a tin can manufacturing plant, so that gasoline and kerosine may be put up in 5 gallon tins for sale in the Alaska market; storage tanks will also be put in at the refinery for storing the refined products. A wharf will be built and a suitable vessel obtained for delivering the refined oils to the many towns along the Alaska coast.

The output of the wells now drilled is 60 barrels a day. The capacity of the refinery now on the ground is 125 barrels a day, and it is hoped that the wells which the company intend drilling this season will bring the output of crude oil up to the full capacity of the present refinery.

The company are making shipments of gasoline to the nearby towns and they have a number of orders on hand, but are as yet hampered in the operation of the refinery and the shipment of the refined product for lack of sufficient storage tanks and proper shipping equipment, which will be overcome when a sufficient amount of the bond issue has been disposed of to provide funds for that purpose.

The capitalization of the company is two million dollars, all of which has been subscribed and \$1,300,000 has been paid up. Mr. Jas. A. McNair, of Vancouver, being its president, the shareholders and bond holders may feel assured that the property will be managed in a conservative and efficient manner.

HEAR! HEAR!

The prosperity of a town is not guarded by the wealth of its inhabitants, but by the uniformity with which they pull together when any important undertaking is to be accomplished. A man with a thousand dollars at his command and a love for town in his heart, can do more for the building of it than the millionaire who locks up his capital and snaps his fingers at home progress.—Queen Charlotte News.

FINE SPECIMENS OF NATIVE SILVER.

One of the finest pieces of native silver ever brought to town, came in on Monday from the Utica, says the "Kootenaiian" (Kaslo). It was brought down by Jean Brochier, the shift boss at the big 12-Mile property. The piece is about 14 inches in length and of irregular size, the streak being about the thickness of a fifty cent piece. It was taken out of a big strike of three feet and a half of galena in the big or west lead. The property is looking exceptionally fine in all directions, according to Mr. Brochier. The continuation of the southern drift on the east vein has opened up another ore shoot which now averages about three inches in width and as the ore on this property appears to run in and out in long regular shoots, an increase of this ore body is looked for as the drift progresses. Hughie Chisholm, of Chisholm Brothers, who have a lease on the apex workings of the Utica, was also in town the early part of the week. They are taking out ore on their lease right along and sending it down by their tram to the base of the peak, where it will be transferred to other conveyances for forwarding to the railway.

Ore shipments have started in earnest from Ainsworth, the No. 1 sending out a number of cars while the Silver Hoard shipped two. There is a car of ore lying upon the wharf made up of lots owned by the No. 1, Silver Hoard and A. D. Wheeler and as soon as the frost is out of it shipment will be made.

Personal and General

(Continued from Page 19)

Mr. E. H. Webster, assistant manager for the Motherlode Sheep Creek Mining Company, operating a gold-mine and 10-stamp mill in Sheep Creek camp, Nelson mining division, has resigned that position to return to Los Angeles, California, U. S. A.

Mr. Fred M. Wells, manager of the Surf Inlet gold-mine, on Princess Royal island, returned to Vancouver about the middle of April.

Mr. W. P. White, of Spokane, who some years ago was superintendent of the St. Eugene lead-silver mine in East Kootenay, during its period of greatest production, was lately in the Boundary district.

Mr. W. R. Wilson, of Fernie, general manager for the Crows Nest Coal Co., was in Toronto last month, attending the annual general meeting of shareholders in the company.

Mr. W. E. Zwicky, of Kaslo, general manager for the Rambler-Cariboo Mines, Ltd., who also has the direction of the development of the Payne mine, Slocan, has put men back to work in the low-level tunnel being driven to open the Payne at considerably lower depth than its old workings reached. For a time work had to be suspended on account of there being too strong a flow of water to allow of driving being continued at reasonable cost.

WASTE IN NATURAL GAS INDUSTRY.

The history of the natural gas industry of the United States is an appalling record of incredible waste according to Ralph Arnold and Frederick G. Clapp, authors of Technical Paper 38 of the United States Bureau of Mines on the subject, "Wastes in the Production and Utilization of Natural Gas and Means of their Prevention."

In this technical paper which has just been issued by the bureau are the following statements from the authors:

"There was evidently no great waste of gas in this country before 1873, as no large gas fields had been discovered, although gas was always wasted in oil production. In 1873 a well of great volume and pressure was struck at Murraysville, Pa., 20 miles east of Pittsburgh, and the gas from this well was allowed to flow to waste for three years with no effort to check it. Up to this time the belief that natural gas was inexhaustible, seemed to be universal, just as in later years a similar opinion prevailed regarding the forests, coal and many minerals, and hence it was not until 15 or 20 years after the first utilization of gas that the pronounced decline of production caused the truth to dawn upon producers and consumers—that the supply was indeed limited.

"The waste of natural gas has drawn the attention of the entire country, and because the waste threatens the life of gas fields, it has prevented many investors from building plants in the various fields, thereby depriving the localities of increased population and wealth. In considering the question of waste, it must be understood that the geological occurrence of the gas in the sandstone, sand, or limestone reservoirs is such that the flow of gas from one well causes a decrease in the flow of others and a reduction of the supply throughout the entire field.

"Instances are common where carelessness and indifference in drilling have resulted in waste of gas from formations penetrated above the regular sand.

"In other instances, if the formations are loose, the gas sand fairly shallow, the pressure great, and the proper precautions are not taken in setting the casing, the gas may escape around the casing, loosening the ground rapidly, and ultimately gaining sufficient volume and pressure to blow the casing from the well. Such 'blowouts' have happened a number of times in the Texas and Caddo fields. They are likely to occur in the first wells drilled in any field, before the conditions attending the gas pockets are generally known. Some excuse may exist for the occurrence of one such 'blowout' in a new field, before the presence of the high pressure gas pocket is known, but there is usually little reason for a second or a subsequent 'blowout' in a field, because precautions can be taken to prevent it.

"Waste in drilling is not so great as formerly, because at the present time drillers have usually every facility at hand to close a well as soon as complet-

ed. By proper preparation most wells can be packed, tubed, and shut in within two hours. According to the conservation commission of Louisiana, the waste from the two principal 'mild' wells in Louisiana had its beginning more from a lack of knowledge of what precautions would be effective than from negligence or indifference. The waste from the first big gas well encountered in drilling for oil in the Buena Vista Hills field of California was due to the unexpectedness of the great flow, and to local inexperience in handling such pressures. This well was controlled only after a Texas operator had been engaged to do the work.

"The most notorious waste at present is in Oklahoma, Louisiana and California. The commission on the conservation of the natural resources in Louisiana, after an exhaustive examination of the situation in the Caddo field, found that the waste approximated 75,000,000 cubic feet per twenty-four hours, an amount equal to twenty times what the city of Shreveport uses now in the same space of time and equal to one-twentieth of the amount consumed by the entire United States." It also found that the value of the gas wasted from a single 'wild' well in that State was in excess of \$2,000 per day. There were three principal wells in the Caddo field from which the greater part of the waste occurred. They were known locally as the 'dry gas well,' the 'mud gas well' and the 'salt gas well.' Two of these have been closed by the owners, thus proving that closure is feasible. No attempt has been made to close the other, and when visited by Mr. Clapp in February, 1912, it consisted of a crater perhaps an acre in extent, in the centre of which the gas was forcing a geyser-like mass of mud and water to a height of twenty to thirty feet. During much of the time this well is burning. The gas from this well has been going to waste for three years. The other wells having an estimated volume of 20,000,000 or 30,000,000 cubic feet per day, blew out and burned for one or two years. In the Caddo field at least 400,000,000 cubic feet of gas has at certain times been wasted daily, practically all the waste being preventable.

"McDowell states that the daily waste of gas in Oklahoma by escape into the air is equivalent to at least 10,000 tons of coal daily, and he states that 80 per cent. of this loss is preventable."

Copies of this technical paper may be had by addressing the Director, Bureau of Mines, Washington, D.C.

The Traylor Engineering and Manufacturing Company, with works at Allentown, Pennsylvania, U. S. A., announces that it is now building three 50 by 380-in. water jacket copper-smelting furnaces for the Granby Consolidated Mining, Smelting and Power Company, Ltd., these being only a part of a very large order received from that company.

\$1,000 invested in Sterling is returning \$3,333 per year in dividends, and the shares can now be sold for \$12,300.

OBITUARY

THE LATE FRANCIS JOHN DEANE

British Columbia journalism and public life in British Columbia has suffered a severe loss in the death of Mr. Francis John Deane, editor and proprietor of the "Cranbrook Herald" and founder of the "Nelson Daily News," which occurred at Vancouver the evening before last and the announcement of which reached Nelson yesterday, says the "Nelson Daily News" of the 12th inst. Although he had been ill for a few weeks the announcement of his death comes as a shock to his many friends throughout British Columbia, and particularly in the Kootenay, where he has been an outstanding figure for the past ten years.

Probably no man who has ever occupied an editor's chair in British Columbia, or even in Canada, discharged the duties of that position with a more whole-souled devotion to what he considered his duty, or lived up to the principles in which he believed more conscientiously than did Mr. Deane. He was a man whom neither money nor selfish consideration of any kind could influence. He was honest in thought and in action.

Politics with Mr. Deane was a religion. A firm believer in Liberal principles, he lent his services and his ability to his party's service, irrespective of personal loss or private gain. In him was represented the type of politician of the highest standard. His death will be a distinct loss to the Liberal party in Kootenay, as well as in British Columbia generally.

It was but natural that, in the discharge of his journalistic duties and in his political career, a man imbued with such sincerity and honesty of purpose as was Mr. Deane should have been what is termed a "hard hitter." But at the same time no consideration would induce him to do anything or to say anything either unfair or unjust. As a result, throughout his life he enjoyed the respect of even his bitterest opponents, and in death leaves a memory unsullied and enduring in the hearts and minds of those with whom, in the midst of his activities he came in contact, as well as to a very large number of others to whom only the result of his work was known.

No better tribute to Mr. Deane's life and work can be offered than to express the wish that every one occupying a journalistic position such as

he did, or taking part in politics, should be guided and governed by the same high ideals which governed Mr. Deane's course of action in both these spheres.

TRIBUTE OF NELSON NEWS TO LATE F. J. DEANE.

The Nelson Daily News pays the following tribute to its former proprietor:

Francis John Deane, from 1902 to 1908 proprietor of the Daily News, and for some years editor of the Cranbrook Herald, died on Thursday at a hospital at the coast from heart failure, following a severe attack of nervous prostration resulting from overwork. He leaves a widow and one child, who were with him at the time of his death.

Mr. Deane was one of the pioneer newspapermen of this province, having followed that profession in Kamloops, where he was owner of the Sentinel for some years before he purchased the Nelson Daily Miner in 1902 and renamed it the Daily News; in Vancouver, where he was a member of the staff of the Daily Province; in Nanaimo, Victoria and places on Vancouver Island.

He was 45 years of age, having been born in Madras, India, on August 8, 1868. He was educated in England and Belgium, and came to British Columbia in 1889. He was a member of the Provincial Legislature for the constituency of North Yale from 1898 to 1900.

Prominent as a member of the Masonic order, Mr. Deane was a past master of the Kamloops lodge. He was also a Knight Templar.

At the time that he purchased the Miner in 1902 from the Beaton estate, W. G. McMorris, S. E. Oliver, D. A. McFarland, Charles H. Ink and C. V. Dake, the two latter of whom have also joined the great majority were on the staff of the paper.

He purchased the Cranbrook Herald, after selling the Daily News in 1908, from F. E. Simpson, and has been editor of that paper ever since. He went to the coast a few weeks ago for the purpose of securing a rest which would enable him to regain his health, having spent some time near Kamloops en route.

Many Warm Friends.

Throughout the province Mr. Deane had warm friends, a large number of whom are residents of Nelson. Always a staunch Liberal, he sacrificed much to the interests of his party, but enjoyed the admiration and respect of all those of other political principles who knew him intimately.

VISIBLE COPPER SUPPLY SMALL

On April 1, 1913, the American visible copper surplus measured exactly 104,269,270 pounds, and the European visible supply measured 100,972,480 pounds bringing the total world's visible supply to 205,241,750 pounds. The total world's supply on January 1, 1913, was 196,903,911 pounds. On April 1, 1912, the

world's visible supply amounted to 175,093,637; April 1, 1911, the supply was 345,101,054 pounds; April 1, 1910, the supply was 373,450,474 pounds, and on April 1, 1909, the supply was 297,112,812 pounds.

A brick plant for Kaslo has recently been shipped from Parkhill, Ont.

PRICES AND CONSEQUENCES.

The steady diminution of the purchasing price of a dollar has been the subject of much discussion, and we are not sure that any one has yet thrown much useful light upon its cause or has suggested a feasible remedy, says the Victoria Colonist of the 16th inst. In a thoughtful editorial. Not many people have considered the possible consequences. Let us place side by side two very momentous facts.

The Occidental world had developed an involved civilization, created artificial wants, reduced the productiveness of individuals by shortening the hours of labor and made living more costly.

The Oriental world has adopted some of the more useful features of our civilization, and is turning them to account by the labor of men whose requirements are yet primitive, and who are ready to give the maximum amount of work for a minimum amount of pay.

What will the consequence be? We spend a great deal of time discussing what we shall do with the "trusts." We exhibit a great deal of supposed wisdom over problems of finance, banking and the like. We talk of regulating tariffs so as to remedy the evils that are growing up around us. But we have very little to say about what the Orient is going to do with us. The demagogue harangues a gathering of working men about the oppression of capital. He has nothing to say to the great menace to our whole social fabric involved in what is now taking place in Eastern Asia.

The Occidental has prided himself upon the claim that he is superior to the Asiatic. Yet the Chinaman has come amongst us and has shown himself to be a capable competitor with us at our own game, handicapped though he is in a hundred ways. The Japanese has boldly faced the whole world in competition and is making a place for himself that cannot be disputed. Even the native of India has found his way into Canada, is mastering new lines of business and accumulating property. Who would have thought that any among the shivering groups of Indian natives, who a few years ago were huddled in the immigration shed, at the Outer Wharves, would by this time have become owners of excellent city and rural property, and among the shrewdest buyers of land in the community?

When we have seen what the Asiatic can do, handicapped as he is, we may perhaps be able, if we take the trouble to think the matter over, to form some idea of what may be expected from an awakened Orient. The greatest question of this century is whether or not the Occident, which has forced the cost of living to a higher point than it has ever before attained, can compete with the Orient when it has fully shaken off the shackles of its traditions—and they are being shaken off very rapidly.

What is the remedy? We do not know. Perhaps there is no remedy. Occidental supremacy is about to be challenged. Are we in a position to take up the challenge with any hope of success, while we are constantly making it more difficult to live by reason of advancing prices?

STRANGE REASONING.

An article on the danger of war in Europe contributed by Professor Ferrero to the Atlantic Monthly, is notable not only for its survey of current events, but also for a theory of the probable causes of war that runs counter to the more popular view, says an interesting editorial in the Phoenix Pioneer of the 12th inst. The professor is neither an alarmist, nor a sensationalist, and if he would have us cut loose from some of our mental moorings, at least he gives us substantial reasons for a change of opinion.

If war should come, says the author, it will be due, not to the ambitions of rulers or the machinations of diplomats, but to the restless excitement of the new democracies. The peoples of Europe are tasting a fuller measure of power than ever before. Without actual experience of war they are beginning to look upon it as a vast adventure, a sort of national frolic, an opportunity for romantic heroism to be welcomed rather than abhorred. The stirring of the great popular masses has called into existence a swarm of newspapers devoted to the easy task of flattering the public passion and of persuading those who know nothing of government that no art is more easily or successfully exercised. On the other hand, the men who were once leaders of opinion, the men of trained sagacity and experience, are withdrawing altogether from public life and devoting themselves to other matters. Power, in other words, has been transferred to the hands of the masses, and the war fever is apt to run through them like fire through stubble.

Professor Ferrero seeks his first example in his own country of Italy and here, at least, he should be on sure ground. The king and the government, he says, were very reluctant to make war on Turkey, but the people and their newspapers insisted. The king was practically told that he must give way or abdicate, and now as a result of a democratic mandate we have the Balkan war and all that may come in its train.

Germany is another case in point. Whatever we may think of the German emperor, it is an incontestable fact that he has falsified all the sinister predictions made of him and that for a quarter of a century, Germany has heard no shot fired in anger. But how long will the emperor be able to stand between his country and war? Professor Ferrero says that "he loves peace more than his people, whose criticism of him is that he will not squander their blood and treasure! but wishes at all costs, to save the one and the other!"

There is no need to multiply examples. The masses, we are told, have the same warlike propensities that they always had. The present generation has hardly seen war and therefore has glorified it into a sport and crowned it with a halo of romance. And the present generation can do what their forefathers could not do. They have all the powers of peace and war. They are articulate, enfranchised—and irresponsible. The author does not profess to predict the outcome, but "if the time should come when organized armies should be no more, but when whole peoples armed with fearful

instruments of destruction should hurl themselves upon one another—the very thought of it would be appalling to us. Yet no less serious does the possibility appear to the eyes of many Europeans."

THE NEED OF MEXICO.

One cannot but reflect, at the present moment, how grave a disaster for all concerned was the revolution which overthrew General Porfiro Diaz.

It was justified by its promoters on the plea that the country was fit for democracy and that the people at large were desirous of exercising their political rights.

But the fact is that no gain in democratic evolution has resulted from the movement, while, on the contrary, the country has been plunged into chronic disorders, which now, at last, it may be hoped, are about to end; brigandage has taken a new lease of life; the finances of the government, which had been carried to a high pitch of prosperity under the administration of General Diaz, have been compromised; wealth has been wasted; the credit and good name of the republic have been impaired; the investment of foreign capital has been checked; thousands of lives have been sacrificed, and untold suffering and sorrow have entered countless Mexican homes.

And all for what? Can anyone name a single advantage to offset such manifold and manifest evils?

The whole Mexican people must make up their minds to a painful process of reconstruction.

We are afraid that the result of this experiment, wherever the blame may lie, will discourage any more for some time to come in the direction of practical democracy. We said the other day that the Madero administration started out with an honest and sincere endeavor to reduce its theories of democracy to practice, but whether the miscarriage was due to that administration or to the Mexican people, who failed to appreciate their opportunity, or to both, there can be no doubt that the attempt did fail and fail disastrously. Further experiments in premature democracy, just now, might prove absolutely fatal and complete the ruin which has been begun.

It were well for all Mexicans just now to remember the old scholastic apothegm: "Prius est asse quam taliter esse." It is more important that there should be a Mexico than that there should be such and such a Mexico.

In bending all their efforts now to the restoration of peace Mexicans will be contributing to the preservation of their nationality, menaced rather from within than from without.

And we believe that Mexicans realize that they will accomplish this task best under a strong military government.—The Mexican Herald.

Development work will be resumed on Monday on the Hummingbird group, on Four-Mile Hill, below the Erie, says the Omineca Miner of the 5th inst. The owners are Thomas King, Martin Cain and Fred Glendinning, all Hazelton men.

RAMBLER-CARIBOO MILL WILL BE ENLARGED.

Reports received by Spokane stockholders in the Rambler-Cariboo mine from Manager W. E. Zwicky, state that the mill at the property is to be enlarged immediately by the addition of crushers and tables to handle the zinc content of the ores, and it is expected that the new equipment will be in operation in about 60 days.

The latter stated also that sufficient water to operate the compressor plant was coming from the melting snows, and that full operations would be resumed in a few days, when three shifts will be employed in both the mine and mill.

An avalanche swept down the mountain near the offices of the company a few days ago carrying out the bridge across the canyon to the cook and bunk houses, its progress being stayed within a few feet of the stables. Manager Zwicky states that the condition of the snow is such that more slides are imminent and fears are entertained that the flume which provides water for the power plant may be carried away.

CONDITIONS ARE IMPROVED.

There are many indications that the general financial situation in the Old Country and elsewhere is brightening, remarks the Nelson News of the 22nd inst. An evidence of this is furnished by the recent flotation in London of \$2,000,000 worth of bonds by the Manitoba government. The issue, which means 4½ per cent. interest, sold at 102, and was over-subscribed at that.

A few weeks ago such a flotation would have been impossible. The change is ascribed to a more easy feeling throughout Europe, due largely to the prospects of peace in the Balkans and a calming down of the European situation generally.

Another evidence of the better feeling in the money market is afforded by the recent reduction of the discount rate by the Bank of England from 5 to 4½ per cent., after it had been at the former figure for the greatest length of time in a half century.

The improvement in conditions will be welcomed not only in Canada, but generally throughout the world. While it can be taken for granted that money will never again be as cheap as it has been, at the same time the restoration of confidence and greater easiness in financial circles will come as a welcome measure of relief.

SELLS MINING CLAIMS ON WILD HORSE CREEK.

Nelson Chisholm of Ymir has transferred his interest in the Goodenough fraction, the Damairscotta and Little Nell claims on Wild Horse Creek, to O. A. Lovell of Ymir, says the Nelson News of the 23rd inst.

Trefle Boyer, of Vancouver, formerly of Nelson, has sold to Mr. Lovell a two-third interest in the Damairscotta claim.

GOLD FROM LOUIS CREEK.

The Vancouver Province of the 29th inst., has the following interview:

Mr. C. W. Knight, of Kamloops, is in town to attend a meeting of his fellow-sharers in the newly organized company which purposes erecting two ice-making and cold storage plants at Kamloops and at North Vancouver, as well as two pre-cooling plants in Okanagan district for the preservation of fresh fruit intended for the prairie and coast markets.

At the Hotel Vancouver today Mr. Knight stated that Louis Creek, where coarse gold was discovered last year by Frank Le Roy, a former Klondiker, promises to be a large producer of the yellow metal this year. Operations are now in progress on the Discovery claims as well as on a group owned by Messrs. Neale Murray, J. Skey and Capt. Fison, of Kamloops. Word has reached here that although crude methods are in vogue the Fison group is yielding by sluicing the sum of \$59 per week per man and bedrock has not yet been reached. Louis Creek is thirty-six miles north of Kamloops on the line of the Canadian Northern Railway.

Mr. Knight is also interested in the Eureka-Bonanza placer mining syndicate which owns several claims on the same creek. It is the intention of the directors to order a plant to be installed this season. This will consist of a giant and an elevator lift similar to those used with much success in the Yukon district.

Mr. Knight added that he heard that some of the ground worked this season had yielded as high as \$50 per yard, although the average is estimated at \$150 per yard. Better results are expected when bedrock is reached.

ORE CARS FOR HIDDEN CREEK MINES.

The Phoenix Pioneer of the 19th inst. says:

The high-pressure activity which has been a prominent feature at the local machine shops of the Granby Consolidated, consequent upon the receipt of extensive orders for cars to be used at the Hidden Creek mine, has considerably moderated, and the big order is about completed. The cars, of which thirty are finished, are of steel and unusually strong, each having a capacity of four tons, while the remaining twenty will receive the finishing touches in a very short time. The order for the cars was received in November last, and taking into consideration the fact that the ordinary work of the shop was in no wise interfered with, the execution of the order reflects no little credit on the machine shop staff and its capable executive head, D. Stafford.

OPTION GIVEN ON IKEDA COPPER GROUP.

A dispatch to the Nelson Daily News of the 17th inst. says:

In reference to a report from Prince Rupert to the effect that the Ikeda group of copper claims on Moresby Island had been sold to an English syndicate, W. H. Armstrong, one of the 10 owners of this group of claims, origin-

ally developed by a Japanese company, stated today that no sale of the claims had been consummated. An eastern company, he said, had taken an option on the group some time ago, but up to the present no steps had been made toward taking up the option.

MINING NOTES

The value of the production of the Mother Lode gold mine at Cheep Creek, Nelson Mining division, for the quarter ending March 31 amounted to \$52,493.32. Operations were considerably hampered by the very severe weather which resulted in a serious shortage of power necessitating running the mill at approximately only half capacity. During the quarter a normal amount of development was done with satisfactory results and the outlook for the present quarter is stated to be good.

Announcement has been made from New York that the directors of the Granby Consolidated M. S. & P. Company have declared a quarterly dividend of \$224,000, payable June 2, but the report created no surprise, as it was stated at the time of resumption of profit disbursements that the company would divide \$1.50 a share among its stockholders every 90 days.

The meeting of the directors was called in advance of the regular date, as President W. H. Nichols was preparing to leave New York for a two months' sojourn in Europe. The payment will make the disbursements for the current year \$448,000 and the total since dividends were inaugurated \$4,449,622. The last dividend prior to the one paid in March was \$2 a share, declared December 30, 1910.

At Seattle on April 15, the suit of James A. Moore against the Metropolitan Trust Co., of New York, for \$1,000,000 damages was dismissed by Judge R. B. Albertson. Mr. Moore contended that the defendant company, which financed an issue of bonds for the Western Steel Company, abandoned him in financing of an \$800,000 issue, and made it impossible for him to sell the bonds elsewhere, thus causing the collapse of his company and throwing the Western Steel Company into bankruptcy. The case had been pending for six months, Mr. Moore's attorney having obtained several continuances on representations that his client was negotiating with the Trust Company for a settlement. The Western Steel Company was organized by Mr. Moore, who obtained for it control of a number of iron-ore and coal properties in Washington and British Columbia, either by purchase or under bond with option of purchase. Iron-making was commenced with ores from some of the mineral claims thus obtained, but after a time pig iron was imported from China, the arrangements with which country provided also for the supply of iron ore. The structural steel manufactured by the company at Irondale, near Port Townsend, Washington, was stated to have been of excellent quality. Representatives of the Metropolitan Trust Company now state that the dismissal of the Moore suit has cleared the way for a resumption of operations at the Irondale steel plant.

BIG RETURNS FROM MINING STOCK.

American mines and metallurgical works, according to returns made to the Mining and Engineering World, made a record during the first quarter of 1913, when 114 companies disbursed dividends totalling \$23,304,820. This compares with the disbursement of \$21,700,390 by 83 companies during the same period in 1912, and with \$21,849,031 in 1911. Since incorporation the above mentioned companies have to their credit no less than \$712,197,042. This is a return of \$108,629,690 in excess of the combined issued capital of the 114 companies and is a record of achievement equalled by but few industries.

The copper properties had much the better quarter, for with only 25 contributing the quarter's disbursements reached a total of \$11,423,187. These 25 properties have had a remarkable career during the years of their operation, for no less than \$372,451,675 has been divided among the fortunate shareholders. All but about \$13,000,000 of this amount came from companies operating in the United States, British Columbia properties contributing approximately \$5,000,000 and Mexican properties \$8,000,000.

Included in the 114 companies paying dividends in 1913 are 84 which are classified as gold-silver-lead-zinc producers. These 84 companies disbursed \$8,965,778—\$4,366,026 of which came from 54 properties in the United States, \$3,537,574 from 18 Canadian properties and \$1,062,178 from 12 Mexican properties. During the years of their operation these 54 United States companies have paid dividends totalling \$148,364,988; the 18 Canadian companies, \$44,188,937, and the 12 Mexican companies, \$22,742,057.

The dividends of five metallurgical companies are included in the total for the quarter, these having paid \$2,915,855. Since incorporation these five companies have paid dividends totalling \$124,449,385.

Eight securities-holding corporations had a very successful quarter, for \$5,698,877 was divided among shareholders. This compares with \$3,839,751 during the same period in 1912. To date these eight companies have shared with stockholders \$157,375,351.

LAURIER'S TALK OF SEPARATION.

"This dependance will not always last. Even now Canada and England have many different interests, and the day will come necessarily when they will have to part."—The aforementioned words were uttered in 1891 by Sir Wilfrid Laurier in Boston.

The dawn of that day which Sir Wilfrid talks about will be a sad one for the English-speaking population of this Dominion, but for the French-Canadians of Quebec every anniversary will be replete with memories of the most bitter description, for on that day which severs the ties that bind us to the old land, the old treaties with the British government which for scores of years have been the mainstay and guardian of the special

privileges enjoyed by the French speaking people of Quebec will cease to be a fact, remarks the Phoenix Pioneer of the 12th inst. The clause, "To the clergy are reserved all their ancient rights and privileges" will become a very back number, and the church of which Sir Wilfrid is so distinguished a son, will be placed on the same level as all other denominations in the Province of Quebec. The Ne Temere decree, as far as Quebec is concerned, will have no more effect in that Province than the message of President Wilson will have on the people of Arabia. The authority of the Roman Catholic church to collect tithes and invoke the aid of the secular courts to that end, will go by the board on Canada's Independence Day. The French language will cease to be heard in debate in the halls of our parliament, and finally the soldiers of Canada will never again be allowed to form an escort for any church dignitary or function. This is what separation will do for Quebec. Perhaps Sir Wilfrid looks for an independent province in Quebec, but better men than Sir Wilfrid ever was or ever will be, once tried that game to the south of us with disastrous results to themselves and followers. Quebec, more than any province in the Dominion, will be the biggest loser by separation.

OF INTEREST TO SURVEYORS AND PROSPECTORS.

Our correspondent in the Chilcoteen country informs us that the ranch and store business near Hanceville, lately owned by Mr. Norman Lee, has been taken over by Messrs. Temple & Tracy, who are now carrying on the business.

Mining men and surveyors going into the Chilcoteen country, or towards Bella Coola, may find this information of interest to them, as Messrs. Temple & Tracy carry a full line of tools, supplies and provisions, and are prepared to furnish pack horses and all necessary equipment for mining and survey parties at a reasonable figure. At this distance from Ashcroft and the railway it is frequently a matter of great convenience to have a supply depot of this description available.

THE WORLD'S GREATEST OIL GUSHERS.

The world has seen some wonderful gushers, but the thousands of wells that keep pumping day in and day out are the cause of the plentiful supply of the fluid that adds so much to civilization.

The Armstrong well No. 1, located on Thorn Creek, Butler County, Pennsylvania, was the first really big gusher that astonished the world. It was struck October 27th, 1884; it was reported dry, but a shot in its bowels started it flowing at 9,000 barrels per day.

It had the record until 1891, when Greenlee & Forst struck the banner gusher at McDonald, Washington County, Pennsylvania. It was located on the Mevy farm, and was estimated as being good for 15,000 bbls., the first day's output.

These wells sink into insignificance when compared with the Palestine, Beaumont well, which filled a 35,000 bbl.

tank in nineteen hours. The Beatty also was something of a well; it threw a solid ten inch stream of oil 260 feet high for several days, and three lives were lost in an attempt to close the gate valve.

The Dos Bocos, in Mexico, after flowing and burning for 54 days at a rate never dreamed of before or equalled, drowned itself in a mighty steam of water. The great Lakeview gusher, in California, after 234 days of constant gushing, at the estimated rate of 60,000 barrels per day, has subsided into a nominal amount of five or six barrels. This gusher has proved the daddy of them all, and we await with interest to see if it will ever be outgushed.—Oil and Gas Man's Magazine.

The Van Roi Mine is on Four-mile creek, about five miles from Silverton. The fine new concentrator was finished in the early part of the year, and has since then been treating about 125 tons of ore a day, producing silver-lead and zinc concentrates. The tonnage of ore milled amounts to about 30,000 tons. Ore-bodies are being developed on three levels at the mine, on two separate veins; it is expected that ore production will be well maintained from both veins. Altogether, the year's work has been most satisfactory.

The natives of India are reported to be swallowing thin gold leaf as a cure for disease. But those who take it must feel a consciousness of inward guilt.—"Ottawa Journal."

To Surveyors and Prospectors

Messrs. TEMPLE & TRACY having purchased the Ranching and Store business near **Hanceville, B.C.** formerly owned by Mr. Norman Lee, wish to announce that they are prepared to

Outfit and Equip MINING AND SURVEYING PARTIES

who may be going into the Chilcoteen country or towards Bella Coola, with

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on a considerable scale and at reasonable prices.

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For Estimates or Further Particulars, Apply to

Messrs. TEMPLE & TRACY
Hanceville, B.C.



NOTICE OF CANCELLATION.

Notice is hereby given that the reserve existing on the east half of Lot 454, Sayward District, formerly covered by Timber License No. 38427 expired, is cancelled, and the lands will be open to pre-emption at the hour of 9 a.m. on Thursday, the 29th day of May, 1913.

R. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B.C.
February 10, 1913.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing by reason of the notice published in the British Columbia Gazette of the 27th December, 1907, is cancelled in so far as the same relates to the following described lands, so as to permit of the sale of the timber standing thereon:—

Those certain parcels or tracts of land situated in New Westminster District, and which may be more fully described as follows:—

(1.) Commencing at the southerly southeast corner of Lot 918, New Westminster district; thence south 15 chains along the east boundary of Lot 2563A; thence East 20 chains, more or less to the east boundary of Lot 569; thence northerly along the east boundary of the said Lot 569 a distance of 15 chains, more or less, to the southwest corner of said Lot 918; thence easterly along the south boundary of said lot to the point of commencement; containing by admeasurement 30 acres, more or less:

(2.) Commencing at the most easterly southeast corner of Lot 569, New Westminster District; thence south 10 chains, thence west 40 chains, more or less, to the fractional east boundary of Lot 569; thence north along said boundary a distance of 10 chains, more or less, to an angle of said lot; thence easterly along the fractional south boundary of said lot to the point of commencement; containing by admeasurement 40 acres, more or less.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B. C.

The estimated expenditure of the Provincial Government for 1913 is \$17,000,000, or \$40 per capita of the entire population.



CANCELLATION OF RESERVE

NOTICE is hereby given that the reserve of vacant Crown lands in New Westminster District, notice of which appeared in the B. C. Gazette on the 19th of October, 1911, is cancelled in so far as it relates to that portion of said lands covered by the applications to lease of Hermon Wilber Vance and John Pederson.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B.C.
2nd April, 1913.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing over Crown lands in New Westminster District, formerly covered by Special Timber Licence 16968, by reason of the notice published in the British Columbia Gazette of the 27th December, 1907, and bearing date of the 24th day of December, 1907, is cancelled in so far as the same relates to the following described parcel of land: 'Commencing at a post planted at the north-east corner of Lot 769, New Westminster District; thence west 17 chains; thence north 40 chains; thence east 40 chains; thence south 13 chains, more or less, to the shore of St. Vincent Bay; thence following the shore-line of St. Vincent Bay to the point of commencement'; and that the said lands will be opened for entry by pre-emption on Wednesday, the 23rd day of July, at 9 o'clock a.m.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B. C., April 14th, 1913.

July 12



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing upon Crown lands in the Cariboo and Cassiar Districts by reason of a notice, bearing date September 12th, 1907, and published in the British Columbia Gazette on September 12th, 1907, as well as the reserve existing upon Crown lands within the Land Recording Districts of Cariboo and Lillooet and the Kamloops Division of Yale Land Record-

ing District by reason of a notice, bearing date April 3rd, 1911, and published in the British Columbia Gazette, on April 6th, 1911, is cancelled in so far as the same affect the acquisition of said lands under the provisions of the "Coal and Petroleum Act."

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B. C., April 14th, 1913.
ap 19

July 12



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing over the lands surveyed as Lot 1603, Group 1, New Westminster District, by reason of a notice published in the British Columbia Gazette of the 27th of December, 1907, and bearing date the 24th day of December, 1907, is cancelled in so far as it relates to the pre-emption of said lands, and that the said lands will be thrown open for pre-emption under the provisions of section 2 of the "Land Act Amendment Act, 1913," on Tuesday, July 22nd, 1913, at 9 o'clock a.m., and that no pre-emption record shall include more than 40 acres; the said lot being divided for pre-emption purposes into quarters of 40 acres each.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B.C., April 14th, 1913.
ap 19

July 12



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve existing over the following parcels of land, situated in Clayoquot District, by reason of the notice published in the British Columbia Gazette of May 23, 1912, and dated May 18, 1912, is cancelled insofar as it relates to pre-emption; and that the said lands will be thrown open to pre-emption under the provisions of Section 2 of the "Land Act Amendment Act, 1913," on the 30th day of June, 1913, at 9 o'clock a.m.; and that no record shall consist of more than one legal subdivision of the said lots, and the maximum area shall not exceed 41.5 acres. Lots 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320 and 1321.

R. A. RENWICK,
Deputy Minister of Lands
Lands Department, Victoria, B.C.
March 12, 1913.

At the present rate in another decade the production of British Columbia mines will reach \$100,000,000.

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eter, 6 ft. 3 in. wide, frame 24 feet x 11 ft.
6 ft. cylinders, 14 x 18, capacity, 2½ tons
at 700 feet per minute. One 100 h. p. and
one 7½ h. p. boiler, both tested to 100 lbs.
pressure. One Northey sinking pump, 8 in.
x 4 in. x 12 in. One Worthington duplex
pump, 20 x 10½ x 10. One 40 h. p. Jenckes
Machine Company engine, 10 x 14.**Address**The Canadian Copper Company
Copper Cliff, Ontario.Many old-timers are skeptical of the
Coquihalla Valley, but if the news from
Spokane prove correct, there will be no
place left for unbelief.**The F. H. Lantz Company, Ltd.**
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Real Estate Loans; one of the Largest Lists of
Speculative and Investment Real Estate in the City.
Private Funds to Loan at Current Rates. No delays.**The F. H. Lantz Company, Ltd.**
342 Hastings Street, West, Vancouver, B. C.**NATURE PAYS BIG MONEY.**Over twenty-eight millions of dollars
in dividends have been returned to the
stockholders of oil companies in one
new field alone, not mentioning other
oil fields.Monthly dividends of almost three-
quarters of a million are being paid
monthly to the holders of California oil
stocks.\$1,000 invested in the Pinal Oil Co. at
60c per share has paid in dividends as
much as \$2,988 per year, and the shares
could have been sold for \$44,800. That
\$1,000 worth of stock is now earning
\$1,990 per year in dividends.\$1,000 invested in the stock of the
Claremont Oil, only a comparatively
short time ago, is returning \$1,598 in
dividends and the shares can now be
sold for \$13,653.\$1,000 invested in Illinois Crude a few
months ago at 25 cents per share, is
now paying at the rate of \$960 per year
in dividends, and the shares can be sold
for \$2,240.\$1,000 invested in the shares of the
Monte Cristo Oil Company has paid in
dividends as much as \$3,600 per year,
and the shares can even now be sold for
\$15,000.\$1,000 invested in Lucile stock a few
years ago is returning \$8,000 per year
in dividends, and the shares can now
be sold for \$73,326.\$1,000 invested in the stock of the
Fullerton Oil Company will this year
earn \$5,000, and the shares can now be
sold for \$60,800.A little investigation on your part
will disclose at least 60 more companies
making big money daily in oil.The article on page 13 of this issue
will give some idea of the vast progress
made in every line of industry in Can-
ada, and is well worth being read by
everyone interested in the business life
of this great Dominion. The paragraphs
having special reference to British Col-
umbia should be read by all.**FOR SALE**Three 125-ton copper smelting furnaces.
Four Cornersville blowers, capacity, 752
cubic feet per revolution, direct connected to
Erle engines. Three converter stands and
fourteen shells. 84 x 126, for electric drive.**Address**The Canadian Copper Company
Copper Cliff, Ontario.**INDEX**

Subject	Page
Federal Government to Help Mining Industry	5
Dominion Department of Mines Will Make Tests Free	6
Crows Nest Pass Coal Co., Ltd.	6
Canadian Mining Institute, Western Branch	7
Lucky Jim Zinc Mines, Limited	8
Mineral Production in 1912	9
The Le Roi No. 2 Concentrating Mill 10	
March Report of the Le Roi No. 2 Mine	10
Conditions at Trail Smelter	10
Great Activity Around Green City ...	11
March Report of the Van Roi Mine ..	11
Good Return of First Shipment from Harris Mines	12
Progress of Mines in Hazelton Dis- trict	12
Good Progress at Rocher de Boule .	13
The Buoyancy of British Columbia..	13
Canada's Production and Imports of Zinc	13
Copper Companies in British Colum- bia	14
Annual Meeting of Boundary Mining & Exploration Co.	14
Lead Production in 1912	14
Ottawa Mine Sold	14
To Resume Work at Queen Mine ...	15
New Type "A" Gyratory Crusher... 15	
The Uranium and Radium Situation 15	
University of Washington College of Mines	17
Personal and General—.....	17
Editorial	20
Latest Metal Markets	21
Coast and Island Mining—	
Progress at Portland Canal	22
Development Cost in Salmon River Camps	22
To Rush Work at Hidden Creek..	22
Progress of Alberni	23
Welsome Hidden Creek Smelter... 23	
Record Output	23
Western Fuel Co's New Mine ... 24	
Rock Salt in British Columbia ... 24	
Capital for Richmond Group	24
High Assays from Sandon Mine.. 24	
Estella Mine to Open.....	24
Alaska Oil Refining Company Buys Oil Lands Lately Held by the Amalgamated Development Co., at Katella, Alaska	25
Fine Specimens of Native Silver ... 25	
Waste in Natural Gas Industry	25
Obituary—The Late Francis John Deane	26
The Need of Mexico.....	27
Prices and Consequences	27
Laurier's Talk on Separation	2
Rambler-Cariboo Mill Will be En- larged	28
Conditions Will be Improved	28
Ore Cars for Hidden Creek.....	28
One Opinion of Mr. Borden's Naval Policy	33
A Canadian Engineer on Canadian Steel	35
Conan Doyle Denounces the Suffra- gettes	36

It has been announced that the Febru-
ary orders of Allis-Chambers Co. includ-
ed four Blake crushers, 16 sets of rolls,
four Hancock jigs, and a double-drum
electric hoist, for the Britannia Mining
and Smelting Co., Britannia Beach.

MINING STOCK QUOTATIONS.

Supplied by Waghorn, Gwynne & Co., Stock-Brokers, Vancouver, B.C.

LISTED STOCKS.

Spokane.		Bid.	Asked.
Ajax		.08½	.17
Alameda		.00½	.01
Alhambra		.04½	.10
Ambergris		.05	.07½
Am. Comd'r		.00½	.01½
B. C. Copper		4.25	4.50
Black Horse		.01½	.02½
Bullion		.01	.02
Bullwhack		.48	.52
Caledonia		.23½	.26
Canadian Cons.		45.00	75.00
Carbonate Hill		.01½	.04
Copper King		.02½	.02½
Copper King (Che.)			.28
Federal, pref.		43.00	51.00
Federal, com.		16.00	23.00
Gertie		.05	.06½
Granby Smelter		68.00	70.00
Happy Day		.01	
Hecia		2.20	
H. E. M.		.07½	.09½
Hypotheek		.02½	.02½
Idaho Giant		.01½	.02½
Idora Hill		.02	.02½
International C. & C.		.37	.41
Jack Walte		.07½	.09
Laclede		.01	.03
Lucky Calumet		.01½	.02½
Lucky Jim		.13½	.17
Marsh		.22½	.26½
McGillivray C. & C.		.15	.18½
Missoula Copper		.02	.02½
Monitor		.01½	.02½
Moonlight		.04½	
Nabob		.01½	.01½
Nugget Gold Mines		.25	.38
Ooom Paul		.01	.03
Puritan		.13½	.19
Rambler-Cariboo		.85½	.90
Rambler Cariboo Ext.		.04	.05½
Silver Cable		.02½	.05½
Snowshoe		.01½	.02½
Snowstorm		.39	.45
Standard S. L.		1.35	1.47
Stanley		.03½	.04
Stewart		1.92	1.97
Tamarack Con.		1.25	
United Copper		.60	1.00
Utica		.16	.19½

Industrials

	Bid.	Asked.
Wash. Water Power Co.	133.00	136.50
Western Union Life	135.00	145.00
Interstate Con. Tel.	20.00	
Tamarack and Custer	1.01	1.25

Cobalt Stocks

	Asked.	Bid.
Bailey	.09½	.09½
Beaver Consolidated	.40½	.39½
Buffalo	2.30	2.10
Chambers-Ferland	.29	.28½
Great Northern	.09	.09½
City of Cobalt	.39	.38½
Conlagas	9.25	9.10
Crown Reserve	3.65	2.58
Foster	.11	.09½
Gnfford	.06½	.06
Gould	.03½	.03½
Green Meehan	.01½	.01½
Hargrave	.08½	.08



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve existing on lands formerly covered by expired Timber License No. 38428 and known as Lot 439, Sayward District, is cancelled, and said Lot will be open to pre-emption at the hour of 9 a.m. on Wednesday, the 7th day of May, 1913.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B.C.

3rd March, 1913

VANCOUVER STOCK EXCHANGE.

Listed Stocks.

	Bid.	Asked.
Dominion Trust Co.		120.00
Great West Per., A	131.50	
International C. & C.	.32	.34
Vancouver Development	10.75	12.00
Alberta-Canadian Oil		.02
Alberta Coal & Coke		.01½
Nugget Gold Mines	.26	
Portland Canal	.01½	.02½
Stewart Mining & Dev. Co.	.10	

Unlisted Stocks.

	Bid.	Asked.
B. C. Copper	2.00	2.50
B. C. Trust Co.	101.00	
Granby		59.00
Northern Crown Bank		98.00
National Finance	105.00	
Pacific Coast Fire		122.00
Pacific Loan Co.	27.00	
Prudential Invest. Co.	90.00	107.00
Canada Cons'd. M. & S.	63.00	
American-Canadian Oil		.05
Amal. Dev.	.00½	
B. C. Refining Co.	.55	
Can. Call Switch	.35	
Can. Pacific Oil of B. C.	.03	
Can. N. W. Oil		.02½
Coronation Gold	.85	
Glacier Creek	.03½	
Grand Trunk Lands	.06	
Hudson Bay Fire	105.00	
Kootenay Gold	.14	.15
Lucky Jim Zinc	.06½	.08
McGillivray Coal	.13½	.18
Nicola Valley C. & C.		17.00
Rambler Cariboo		.45
Royal Collieries		.02
Snowstorm	.33	.38
Standard Lead	1.22	1.33
Stewart Land	7.00	
Red Cliff Min. Co.	.05½	.07½
Western Union Fire		66.00
White Island Sulphur		1.75
World Building		8.00

As showing the tendency of mining to eclipse all other pursuits, William Walsh, State Inspector for Mines in Montana, points out that during the last half century the agriculture of the world has only doubled; the products of manufacturers have only quadrupled, while the output of mines has increased more than thirteen fold.

Canada has the largest nickel mines in the world.



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve existing on lands situated in the vicinity of Slocan River and formerly embraced in Special Timber License No. 31424 expired is cancelled and the lands will be thrown open to pre-emption at the hour of 9 a.m. on Monday, the 9th day of June, 1913.

R. A. RENWICK,

Deputy Minister of Lands.

March 3, 1913.

A. VAN DER NAILLEN, JR.

For a quarter of a century the leading Engineering Educator of the West, is now associated with

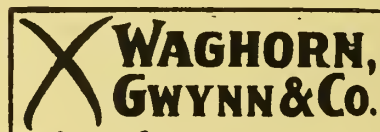
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ONE OPINION ON MR. BORDEN'S
NAVAL POLICY.

A little plain speaking is an excellent thing for that class of voters who habitually get their heads into a muddle over the intricate and involved oratory of the common or garden Canadian vote-hunter. For this reason, and at this particular time, when the anti-British and anti-Imperialist Liberals in the Dominion House are making such an exhibition of themselves over the Hon. Mr. Borden's naval policy for Canada, we take the liberty of quoting no less plain speaking a publication than the well-known Calgary Eye-Opener, from its issue of November 16th last. Mr. Editor Edwardes is notoriously a little rough in his language, nor are we always able to see eye to eye with him in his views on the sanctity of democracy and the holiness of the common people. But, when it comes to a matter of genuine patriotism, combined with common sense, Brother Edwardes is there with the bells on. His remarks of November last make curiously interesting reading in the light of what has happened since, and can be studied with advantage by every voter in this Dominion. Here is what he says:

Before another issue of the Eye Opener is upon the streets, Premier Borden will have announced his naval policy and his proposals will then be the subject of general debate. For reasons that will occur to anyone who can see beyond the end of his nose, it would have been better if the "emergency fund" of which the press of this country is full, had been arranged during Mr. Borden's visit to Great Britain. That was the psychological moment when it would have been accepted like hot cakes and have met with the support of the Liberals and Conservatives alike.

However, the terms of the emergency grant, or whatever it is to be, is still in front of us, but when it is made public we shall be willing to contribute, and contribute generously to the upkeep of the empire's navy.

In dealing with a question like a navy programme for the Dominion, the Eye Opener cuts out everything that looks like hysteria. It believes in common sense and lots of it. From a financial standpoint it is sound common sense and rigid economy for Canada to contribute generously to the imperial navy. We shall explain why.

Take the economical side of it. Canada is the only great exporting nation today that has provided no protection of any sort for its sea-going trade. Suppose out of the present hostilities in Europe, Great Britain were to get into a mixup with Germany and Austro-Hungary, and as a result of the tangle she became hopelessly crippled and it became necessary to call upon the United States to exercise a sort of protectorate over the Dominion, what would happen? Why, Washington would call upon the Dominion government to contribute at least ten million dollars annually to the maintenance of its navy and another ten millions per year for military purposes.

In the event of such a contingency it would be foolish to talk a lot of bunk about a "Canadian built navy, built in Canadian shipyards by Canadian labor, to be manned by Canadian sailors." The crippling of Great Britain would change the complexion of all that and Canada would be accepting a position very similar to that of Egypt today. A nation that is not a nation. A people ruled over by an alien government. Such a condition of things would hardly satisfy the pride of the independent people of the Dominion.

Some will argue that Great Britain is not likely to be put out of business as readily as it is suggested above, and will go further and question if any real emergency exists. A very pretty spectacle these gentlemen afford. In such a case it is not a matter of saving the British empire, it is rather a matter of saving our self-respect and dignity. New Zealand, Australia and South Africa have come into the ring. With the most perfect grace possible and with a fine imperial sentiment, they recognized

the fact that they are part and parcel of the British empire and have not indulged, as far as we know, in any cheap sneers on whether Great Britain is or is not in a condition requiring assistance at the hands of her young Dominions.

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The matter should be dealt with in a spirit of manly common sense. The British empire will probably get along without Canada, but that is no reason why this country should attempt to sneak out of its responsibilities. Canada as part of the British empire should contribute to the common defense of the empire without pressure. It is a plain matter of selfrespect and duty about which there should be no serious disagreement. Let the navy question be dealt with as other questions are dealt with, without timidity and without excitement.

There will be no upheaval in Canada over an expenditure of thirty millions for defence. Even those who think the amount large will remember that Canada spent nearly ten times as much building a railway from Moncton to Winnipeg.

The Liberal party of Canada spent these millions with a light heart. What objections does it urge against Canada's contributions to imperial defense? Search its columns through and the chief objection will be found in the fact that the Chancellor of the Exchequer in the British government at the end of his last financial year had a surplus of above thirty million dollars, and for this reason it would seek to shirk responsibilities and make the people of this country do the same.

Fortunately the people are not as cheap as the Liberal press. They do not want to get something for nothing. Canada is horrified, and rightly so, at the stories of the poverty that exists in London, England, and in other great centres of Great Britain, and yet at the same time the Liberal press would suggest that Canada need not pay her share towards the upkeep of the empire because the British Chancellor has thirty millions of dollars of surplus in his purse!

Let the British Chancellor, if he will, spend his surplus on his poor and starving, or do what he will with it, so long as Canada is not a suppliant on the charity of Great Britain. Canada could cut out this poor relation attitude and stand upon its own feet. It is an ignominious thing to hear the Liberal politicians talk in one breath of the natural resources of this country and its certain brilliant future, and then the next moment see them with their hats in their hands begging alms in Downing street. If a boy of theirs behaved as they are behaving in connection with Canada's grant to the Empire-navy, they would very properly whip him for bringing disgrace upon his family. Yet they are bringing disgrace upon this country by their unworthy sneers about that thirty million surplus.

That is the only argument that has been raised by the Liberal party against a Canadian contribution to imperial defense. It admits that Canada needs a navy, but it cannot see anything better than the Niobe and the Rainbow. If that is the best it can do it had better stand aside and let the Borden government do its work.

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A DISGRACEFUL THEORY.

The Hamilton Herald draws attention to the fact that Canada is the only part of the British Empire wherein the theory has been advanced that the voluntary gift of a warship to the British Navy is in the nature of a tribute. General Smutz, the Minister of Defence in South Africa, who not so long ago was in the field fighting against Great Britain, refers now with pride to the fact that South Africa was the first part of the Empire to present an instrument of war to the imperial navy. He referred to the cruiser Good Hope. He says: "The people of South Africa have in the past shown themselves to be ready to make sacrifices in the public interest, and I am sure they will not hang back when the call is made on them to do their best in the matter of naval defence."

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A CANADIAN ENGINEER ON CANADIAN STEEL

Says the Calgary Eye-Opener:

Apropos of Dreadnought building in Canada, just cast your lamps over the following extract from a letter on the subject by an eminent Canadian engineer:

"I notice that one of the Liberal members says that we can build bridges and why not war vessels.

"But no steel bridge has yet been made of Canadian-made steel in this country. It is only within the last few years that the small bars for reinforcing concrete have been rolled in Canada. Only small structural sections are rolled in Canada at present, and I venture to say that not a pound of steel of Canadian manufacture is used in any steel-frame buildings in Canada. If the greatly increasing demand for structural steel and a protective duty of 35 per cent. has not yet induced steel manufacturers to roll structural shapes, it will take a lot of militarist talk before there will be sufficient demand for Dreadnoughts by the electors, to induce capitalists to put their

money into shipyards for building war vessels.

"As a Canadian, I am proud of the advancement made in nearly every line. The steel industry has also made great strides, but we are still dependent upon the old country and the United States for our larger structural sections. It is not insulting to Canadians to state these facts. We are not lacking of brains, but handicapped in location of coal and iron ores. These large undertakings require time and capital to develop them.

"A. W. Connor.

"Consulting Bridge and Structural Engineer, Toronto."

THE SUFFRAGETTE.

Here is Lady Dorothy Nevill's opinion of the suffragette and her methods:

"Heaven did not make women insinuating and persuasive that they might be peevish; it did not make them feeble that they might be imperious; it did not give them a softer voice than man in order that they might rail at him; nor delicate features to be disfigured by rage.

"Angry women forget themselves and the dignity of their sex, which has never gained much by scolding. The fact is that, in a great many cases, modern woman—in England I mean—is spoilt."

FUTURISM DEFINED.

The Futurist picture exhibition in New York, says the Daily Telegraph correspondent, has thus impressed a local poet:

I beheld a pile of brickbats underneath a cellar stair,
Which was labelled "Spanish dancer with the limelight on her hair,"
I remarked a slab of lime-stone on a dingy rubbish heap,
And was told it was the portrait of "An Indian child asleep."
Seven lengths of cedar scantlings were "My Lady's Easter hat."
I don't hanker for the future if it's going to be like that.

A GOOD SIZED EMPIRE.

The Calgary Eye-Opener offers the following plain facts for consideration:

Those narrow-gutted persons who grudge contributing to the defense of the empire should take into consideration that the British Empire is some size. It is 53 times the size of France, 52 times that of Germany, 3 1-2 times that of the United States of America, thrice the size of Europe, with treble the population of all the Russias. It extends over 11,000,000 square miles, occupies one-fifth of the human race, or 350,000,000 people, embraces four continents, 10,000 islands, 500 promontories, and 2,000 rivers.

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LOADING UP POSTERITY.

Toronto Globe.

Mr. J. J. Hill has been talking again. And he never talks without saying something. His latest remarks were made at a banquet of "credit men." They should be megaphoned all over Canada and the United States. This is what he said: "The whole American public is wild with spending. Public economy is a lost art. All bonds of municipalities are now refunded instead of being paid when due. The excuse for bond issue is always that posterity ought to bear part of public improvements. This is perhaps the meanest form of stealing ever invented, because it adds to the criminality of breach of trust the baseness of embezzling the future resources of our own children, who, since there must be an end to borrowing some time, will have these debts to pay."

THE EVIL INFLUENCE OF THE
PEACE PARTY.

It is to be hoped that the conversion of Sir Arthur Conan Doyle referred to in another column is merely an indication of a general awakening of the British people to the real peril of their position, says the Hedley Gazette of the 17th inst., in an able editorial. The evil influence of the peace-at-any-price party in England and especially the Anglo-German Society which has sought to lull the British nation into a feeling of false security by their blind propaganda in reference to the pacific intentions of Germany towards their country, is an influence that cannot be got rid of in a day, but better that it pass slowly than not at all. The most serious feature is that it has been men in authority who have been tainted with it. Compromise and puerility have been doing their fatal work and "concillation to the point of

flabbiness" has advanced to such an extent that even, as one noted writer puts it, "the Minister of War, with a rotund person and face of a cherub, answers attacks, not in the voice of Mars, but in the falsetto and piping tones of peace." Time and again Minister Haldane has demeaned himself and his country by his crawling attitude towards Germany and his absurd attempts to have Germany abandon her warlike preparations, until he has filled the Germans up with conceit that they have made Britain scared out of her boots. Both in the House and out of it Radicals are incessantly manifesting almost abject terror lest a word be said in Britain that would indicate that Britain would even strike a blow in her own defence if attacked by Germany, and the result of it all is the fostering of such self-conceit in the mind of the average German as that given expression to by this General Bernhardt.

CONAN DOYLE DENOUNCES THE
SUFFRAGETTES.

A London (England) despatch of the 29th inst. says:

Sir Arthur Conan Doyle fiercely denounced the suffragette militants at a meeting at Wells yesterday.

"It is necessary," he said "to differentiate between honest constitutional suffragettes and these female hooligans and the even more contemptible class of people who find them the means to carry out their malicious monkey tricks. It would seem that the only thing left for the militants to do in the way of meanness is to blow up a blind man and his dog.

"They imagine that in a proud old nation like ours they can move men by an appeal to their fears to do something which their knowledge tells them is not right. We can proudly boast that our

country has some of the best women in the world. He would not be an honest man, however, who did not admit that we have also some of the worst, who have let down the fair name and dignity of our English womanhood. Probably if we had women judges and jurists we should not see the weakness that now appears."

Sir Arthur, whose speech was punctuated by applause, prophesied that the vote will not now come to women for a generation.

THE LORD'S DAY ACT

Every sensible man is in favour of Sunday observance but not every sensible man is in favor of bringing the Dominion Lord's Day Act into operation in British Columbia, says the Victoria "Week," in a recent issue. This attitude is not due to any lack of reverence for the day or sympathy with the enforcement of all reasonable laws governing its conduct. It is the result of the experience of other parts of the Dominion and of a growing conviction that it is not the enforcement of law, but the abuse of license, which is being sought, the license to regulate the conduct of other people in matters which are non-essential to the public weal. Hitherto British Columbia has enjoyed immunity from persecution of this kind, and such immunity has acted beneficially on the public temper. There is no province in Canada where law and order are so much respected and observed; where property is so safe; and where the individual is freer from molestation. There is a sound and healthy public opinion which like the magnetic needle, points unerringly to the enforcement of law. It is more than doubtful whether this healthy attitude would be maintained with the same sensitiveness and force if such an act as the Dominion Lord's Day Act were applied. The reason for this is not far to seek. The promoters of the legislation have departed far from their original standards of conduct. Setting out to procure a day of rest for the toiler their chief object now seems to be to prevent that day of rest becoming a day of recreation. Having secured the day for him they demand the right to tell him how he shall spend it. The very basis of their original demand, toleration for the rights and privileges of others, is now utterly disregarded by them in their attempt to abolish the privileges and curtail the rights of others. The hostility which they have aroused in Ontario and Quebec is poor encouragement to give them recognition in British Columbia. Never was the wisdom of the Attorney-General in refusing to place the province under the Act more clearly demonstrated than today, and the pre-science and sound judgment which prompted that step may safely be trusted to protect the province from any violation of the Sabbath without invoking the aid of an act which in doing some good has wrought much evil, and which would rank British Columbia with the other provinces of the Dominion, that are willing to bow their necks to the yoke of intolerance.

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to Vancouver, and enough cars left over to make another smaller train reaching from Winnipeg to Calgary. These cars would be equivalent to 11,825 regular sized trains, and if they passed through your town, one behind the other, at thirty miles an hour, one would have to stand on the station platform six days and six nights to see them through.

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gratulations to offer to the Le Roi No. 2 and the Consolidated Mining & Smelting Company of Canada for their wisdom in effecting a compromise in connection with the conflicting rights arising from their adjoining groups of claims at Rossland, B. C. The disputed ground lay in the Le Roi No. 2 property and it was claimed to belong to the Le Roi property, purchased a year ago by the Canadian company. The necessity for some such readjustment of interests was fully known to the directors before the Le Roi property was sold to the Canadian company, and the directors of the Le Roi No. 2 were, therefore, not unprepared. Le Roi No. 2 transfers portions of the No. 1 and Josie claims, together with certain underground rights, to the Consolidated, and in return acquires the Monita claim. The possession of the latter ground will greatly facilitate the development of ore bodies in the northern end of the Le Roi No. 2 property. — Mining Magazine, March, 1913.

AN INTERESTING COINCIDENCE.

As a matter of fact, all the British newspapers that took the Boer side when Canadian soldiers were in South Africa fighting in the British army, are opposed to the Borden naval scheme, and are approving of the Laurier obstruction, as they approved Sir Wilfred's objection to the sending of troops to South Africa.—Toronto Mail and Empire.

POLITICS IN THE PULPIT.

Lord Robert Cecil, M.P., in speaking to the members of the vicar of Hitchin's Bible class on the occasion of its seventh anniversary, dealt with the connection between religion and politics. He said history showed that no Church could go into politics without it being bad both for the Church and for politics. But today some ministers argued that they should use the pulpit to inculcate some political duty on their congregation. They might think it right, but in his opinion it was wrong, and totally against the teaching of the New Testament.

Christ and His disciples separated themselves from all political matters, and would have nothing to do with the politics of the day. That was a striking thing, for the Jews of that day were an intensely political people, and resented bitterly the domination of the Romans. Right through Christ's ministry He showed that He was not a political reformer, but only advocating religious matters. In preaching politics ministers fell into the same error as the Pharisees whom Christ denounced as hypocrites. He did not say that a minister should not take any part in politics, for he was a citizen besides being a clergyman. "But I say when he does so he must make it clear that he is doing it as a citizen and not as a clergyman." (Loud applause).

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No. 5

Western Branch Canadian Mining Institute

Fifteenth General Meeting of the Western Branch of the Canadian Mining Institute Takes Place at Rossland — A Notable Gathering — Members of Spokane Local Section of American Institute of Mining Engineers Attend in Joint Meeting—Valuable and Interesting Papers Read

The fifteenth general meeting of the Western Branch of the Canadian Mining Institute was held at Rossland, on May 22 and 23. As, by prior arrangement, this was a joint meeting of the Spokane Local Section of the American Institute of Mining Engineers, with the Western Branch of the Canadian Mining Institute, it was attended by members of both institutes, and

mine and stamp-mill near Paulson, Trail Creek mining division; and Mr. E. E. Ward, superintendent of the Silver Hoard mine, in Ainsworth camp, West Kootenay. Members of the Western Branch, C.M.I., present were Mr. M. E. Purcell, of Rossland (chairman), superintendent of the Consolidated Mining and Smelting Co. of Canada's Centre Star-War Eagle group of mines; Mr. E. Jacobs, of Victoria (secretary); and Messrs. S. G. Blaylock, Lorne A. Camp-

Rossland; and Wm. Watson, New York, mining engineer.

THURSDAY EVENING SESSION.

The first session was held on Thursday evening, May 22. Mr. M. E. Purcell presided, and with him sat Prof. R. S. McCaffery. It having been arranged that the Mayor of Rossland would, on his return to town the following evening, welcome the visiting members of the two institutes and



Bear River, Cariboo, B.C., at Site of Coal Outcrops.

greater interest in the proceedings consequently resulted.

Among those present representing the Spokane Local Section, A.I.M.E., were Prof. R. S. McCaffery, of Moscow, Idaho (chairman), professor of mining engineering at the University of Idaho; Mr. L. K. Armstrong, of Spokane, Washington (secretary), editor of the Northwest Mining News; Messrs. F. C. Bailey, Geo. Crerar, J. Cleveland Haas, and D. F. Strobeck, all of Spokane; Mr. H. W. Newton, of Republic, Washington, metallurgist and superintendent of the North Washington Power and Reduction Co.'s gold-saving mill at Republic; Mr. Frank E. Pearce, manager for the Inland Mining Co., operating a gold-

bell, Graham Cruickshank, S. S. Fowler, Jas. MacGregor, Alfred McMillan, Fred S. Peters, P. W. Racey, A. B. Ritchie, K. H. Stewart, and John Vallance. Some of the visitors were: Messrs. W. M. Archibald, Trail; Chas. A. Banks, manager Jewel gold-mine and stamp-mill, near Greenwood; Chas. W. Drysdale, Geological Survey of Canada, Ottawa; A. S. Goodeve, Ottawa; H. H. Johnstone, Rossland; Prof. Arthur Lakes, Denver, Colorado; H. Perry Leake, Nelson; E. Levy, manager Le Roi No. 2, Ltd., Rossland; J. D. McDonald, local manager West Kootenay Power and Light Co., Rossland; E. G. Montgomery, assistant superintendent Centre Star mines, Rossland; P. Newitt, superintendent Le Roi No. 2 Co.'s concentrator,

other visitors, the chairman briefly expressed gratification on behalf of his fellow citizens, as well as himself, at the meeting being held in Rossland, and assured the visitors that everything practicable would be done to make their short stay in the "Golden City" and vicinity pleasant as well as instructive.

Professor McCaffery, in a few appropriate sentences, thanked the people of Rossland for their hospitality, with the quality of which, however, he was not unacquainted, having last summer visited the camp with a party of mining engineering students from the University of Idaho. The business of the meeting was then proceeded with.

History and Geology of Rossland Camp.

The branch secretary said that while the Rossland "Miner" had placed before the visitors much information concerning the eventful history of Rossland camp since Bourjois and Morris staked several mineral claims on Red Mountain; had told of the ups and downs that had attended its development through 19 years of its production; and had printed a table showing that, during that period—1894 to 1912—there had been produced from local mines 4,104,228 tons of ore containing 2,018,152 oz. of gold, 3,383,951 oz. silver, and 86,838,170 lb. copper, together having a gross value of \$55,577,452;; he would still venture to give them a brief review of the camp from the beginning of mining here.

The construction of the Dewdney trail, which was built through to Wild Horse Creek, East Kootenay, in the early sixties, provided the first means of access to what is now Rossland camp. It is on record that in those early days prospectors saw the iron-stained cappings of this neighborhood and put down a few prospect holes, but the low grade of the surface ore and the long distance from smelting centres had a discouraging effect, for no development work was done until about 25 years later. In 1889 Joseph Bourjois staked the Lily May, alongside the Dewdney trail and distant a mile or two from the present town of Rossland. In 1890 he staked the Centre Star and War Eagle, while Morris staked other mineral claims. They also discovered the Le Roi, which became the property of Col. E. S. Topping, then living on land at the mouth of Trail Creek. Late that year Colonel Topping interested Spokane men in Le Roi, and Mr. Oliver Durant arranged for them an option on a 16-30th interest under a six months' working bond.

In the spring of 1891, after many vicissitudes had been experienced, ten tons of picked, pure sulphide ore from the bottom of a 35-ft. shaft on the Le Roi was packed down to Columbia river and shipped thence to Butte, Montana. Smelter returns gave gold about 4 oz. and silver 3 oz. per ton, and copper 5.21 per cent. The bond was taken up, and afterward the remaining 14-30th interest was sold by Colonel Topping to other men. The Le Roi Gold Mining Co. was then formed and some 70,000 shares sold at a low price. The proceeds of the sale of these shares having been exhausted, work was suspended until the winter of 1893-4, when, a road having meanwhile been constructed from the Columbia up Trail creek to the claims, the ore that had been accumulated on the dump was hauled in sleighs to the river and shipped thence to the smeltery. The returns received gave a good profit, so active mining operations were begun, and the Le Roi mine was soon fairly launched on its career, which for some time was a very successful and profitable one. Other claims that were developed were the Centre Star, Idaho, and War Eagle. In February, 1895, the

War Eagle, by this time controlled by Mr. P. Clark, of Spokane, and which had become one of the best mines in the camp, paid its first dividend, amounting to \$32,500.

On October 10, 1895, Mr. F. August Heinze, then at the head of a smeltery in Butte, commenced the construction of smelting works on the west bank of the Columbia near the mouth of Trail creek, and in February, 1896, the first furnace there was blown in. Mr. Heinze's first contract with the Le Roi company provided for the smelting of 37,500 tons of ore at a freight and treatment rate of \$11 a ton, and for an additional 37,500 tons at similar rates to the lowest obtainable on the open market. A narrow-gauge railway was constructed by Mr. Heinze from the smelting works to the mines. Later, Spokane men established smelting works at Northport, Washington, a railway having meanwhile been constructed from the Spokane Falls & Northern Railway at Northport to Rossland. In March, 1898, Mr. Heinze sold the Trail smelting works and the Columbia & Western railway from Rossland to Trail and thence up the Columbia, to the Canadian Pacific Railway Co., and afterward a separate company was organized to operate the smelting works, which company eventually developed into the present Consolidated Mining & Smelting Co., of Canada, Ltd.

Geology and Mineralogy—Regarding the geology and mineralogy of Rossland camp, Mr. Jacobs said that he had omitted to bring with him a copy of Mr. R. W. Brock's "Preliminary Report" on Rossland camp, issued by the Geological Survey of Canada, so was unable at that time to make extracts from it. Those who had access to the Survey reports could, however, look up for themselves what Mr. Brock had published relative to his work in connection with a structural survey of the camp. For the present, then, he would only quote briefly from Mr. R. G. McConnell's report of the geological work he did in the camp in 1896, which report could be found in the "Summary Report of the Geological Survey, 1896," and was reprinted in the "Annual Report of the Minister of Mines for British Columbia, 1897." In 1897 a reconnaissance geological map was issued by the Geological Survey. Then, too, there was some valuable information, strikingly illustrated, included in a paper on "Ore Deposits of Rossland," contributed by Mr. E. B. Kirby and printed in the "Journal of the Canadian Mining Institute" for 1904.

The most noticeable feature in the geology of the district examined by Mr. McConnell was stated by him to be the marked predominance of rocks of igneous origin. Two great series are represented, of which the older consists mostly of porphyrites, diabases, gabbros, tuffs, and agglomerates, and the younger of granites. The distribution of the various members of the eruptive series is extremely irregular, and, owing to the large proportion of the surface concealed by drifts and forests, and the limited time then at the disposal of the geologist, it was

found impossible in many cases to trace out junctions, except in an approximate manner.

The auriferous iron and copper sulphide ores occur almost exclusively in the massive members of the eruptive series, and most of the important ore-bodies which have so far proved productive are situated either on or close to the line of contact between the gabbros and surrounding porphyrites and surrounding diabases. The ore-bodies are, however, not altogether confined to the neighborhood of the central gabbro area, but are also found in the bands of massive porphyrites which alternate with the surrounding volcanic fragmental rocks and argillites. The tuffs, agglomerates, and associated slates, with few exceptions, and those of little promise, do not contain the typical iron and sulphide ores characteristic of the Trail Creek region, but are traversed by occasional quartz veins which appear to belong to a later date.

The ores of the massive eruptive rocks, as already stated, consist principally of sulphides of various metals. Of these, pyrrhotite, or magnetic iron pyrites, is by far the most abundant. This mineral constitutes the common Rossland ore. It is found, as a rule, in a massive condition, ranging in texture from a fine to a medium grain, but it is also disseminated through the country rock. The massive variety usually holds grains and irregular patches of other sulphides and blebs of quartz. The pyrrhotite contains gold and silver in varying quantities, a small percentage of nickel, and traces of cobalt. The golden contents are exceedingly irregular, ranging from traces up to several ounces to the ton, and silver from traces to four or five ounces to the ton. The pyrrhotite is usually accompanied by a certain amount of chalcopryite, or copper pyrites, intimately commingled with it. The copper pyrites is extremely irregular in its distribution, in some places constituting a considerable proportion of the ore-body, and in others occurring only as isolated and occasional grains and patches. It was nowhere seen pure in large masses. It is auriferous and holds apparently about the same percentage of gold as the inclosing pyrrhotite. Mispickel, or sulph-arsenide of iron, is found associated with the pyrrhotite and in places occurs in considerable quantities. It is auriferous, and occasionally a portion of the iron is replaced by cobalt, and it passes into cobaltiferous mispickel or danite. Molybdenite, or sulphide of molybdenum, occurs at some of the mines, and it is stated to be highly auriferous in some cases. Beside the foregoing minerals, galena and blende occur outside the main mineral area, but, so far as known, are not found in the principal Red Mountain mines. Ordinary iron pyrites is met with in greater or less quantity nearly everywhere. The ores are usually oxidized on the surface, but the alteration seldom extends downward for more than a few feet, and in some cases a single shot brings into view the unchanged sulphides.

Beside the pyrrhotite and associated sulphide ores characteristic of the basic volcanics, an important system of siliceous ore-bearing fissure veins has a wide distribution in the district. The quartz leads are not confined to one formation but occur indiscriminately in all. They vary greatly in size, but seldom exceed six to eight feet in width, and usually average less. They contain free gold, auriferous pyrites, chalcopyrite, and galena.

Discussion—In connection with his comments on the early-history notes just read, Mr. S. S. Fowler mentioned that in the early days, when travelling in a stage to the North Star mine, East Kootenay, with Joe Bourjois (who is stated to have located the North Star in 1892), the latter, during the three or four days' journey, frequently lamented that his partner had sold the War Eagle for too low a sum—only \$45,000, which, however, Mr. Fowler thought was a fair price for the prospect that the property then was.

Mr. Banks asked whether the ore still holds out at depth in Rossland mines, and what depth had been reached. In reply, the chairman stated that the aggregate gross value of the ore produced to date had been in excess of \$55,000,000, and that the bottom of the deepest shaft in the Centre Star is 2300 ft. from its collar.

Oxygen Helmets in Mine Fires.

The next paper was on "The Use of Oxygen Breathing Helmets in Mine Fires," by Mr. E. P. Dudley. This was a statement of experience in connection with a fire that took place last autumn in the Bunker Hill & Sullivan mine at Kellogg, Coeur d'Alene district, Idaho. In the absence of the author, the paper was read by Professor McCaffery. The fire under notice occurred in October, 1912, and the usefulness of oxygen helmets in fighting underground fires was demonstrated on that occasion, for men wearing them were able to get to where the fire was burning, and, notwithstanding that they had to work in thick smoke, to extinguish it. Incidentally the advantages and disadvantages of the oxygen apparatus of different makes were commented on.

The Draeger Pulmotor.

Half an hour was next spent in demonstrating the use of the Draeger pulmotor, which apparatus had been kindly lent by the Provincial Department of Mines for demonstration purposes. The secretary stated that although he had had the method of using the apparatus explained to him, he was not sufficiently familiar with it to show it to best advantage. However, Professor McCaffery showed the working of the machine, interest in which was general. It was explained that this device is intended to induce respiration in those who have been overcome by noxious gases, those apparently drowned, and those unconscious from electric shock. Oxygen is forced into, and air drawn out of, the lungs by this machine. Testimonials

as to its efficacy in a number of cases under varying conditions were read. Several of those present stated their respective experiences in restoring to sensibility men who had been overcome, and the opinion was expressed that in some cases the usual muscular exercise of the patient would aid greatly in restoring him.

Mr. Fowler thought all present at the meeting would agree with him that an excellent purpose had been served in thus bringing under their notice the usefulness of the pulmotor, and the branch secretary and the Department of Mines deserved their thanks for having afforded them an opportunity of seeing the machine and the ease with which it could be used in cases of necessity.

Surface Ore-Handling and Sorting Arrangements.

"Surface Ore-Handling and Sorting Arrangements at the Centre Star Mine," was the title of a descriptive paper contributed and read by the chairman, Mr. Purcell. As the visitors were to go to the mine the next day, these notes were timely and of more than ordinary interest. The paper follows:

"Ore is hoisted from the mine in 4 1-2 ton self-dumping skips, and is dumped over a grizzly, the bars of which was spaced 4 in. apart, the oversize going into a bin having a capacity of about 100 tons. The ore that passes through this grizzly then goes over a second grizzly, the bars of which are spaced 1 1-2 in., the fines going into the fine-ore bin and the middlings into another bin.

"Directly under the large bin containing the oversize, there is a 24 by 36-in. Farrel crusher, with jaws set to a 4-in. opening. The coarse ore from the bins above feeds by gravitation to the rock crusher, and the fines, resulting from the crushing operations, go into the fine-ore bins, and the coarse ore into the same bin as the middlings. The ore is now reduced to two classes, viz., fine and coarse, and is in separate bins.

"At the mouth of each bin is a chute fitted with a rock and pinion ore-bin gate. Below each gate is a shaking apron. The ore descending from the bins is fed by the shaking apron on to a link-belt steel conveyor, 58 ft. from centre to centre. The belt for the coarse ore is 4 ft. wide over all, and the fine-ore belt 30 in. wide. These two conveyors dump the ore on two other conveyors of similar size and pattern and 302 ft. 6 in. in length between centres. These long belts take the ore up an angle of 10 deg. into the ore-sorting room, through which they travel horizontally, carrying an average load of 90 to 100 tons per hour. The load can be increased to 150 tons in an emergency.

"In the ore-sorting room, which is 50 ft. long and is well lighted and heated, men placed on both sides of the coarse-ore belt sort out by hand the barren rock, bits of wood and steel,

and drop this refuse into chutes conveniently arranged, through which it descends into the waste bins below. The waste from the bins is sampled daily, as a check on the material thrown away, and special samples are taken occasionally from each waste-bin as a check on individual ore-sorters.

"The sorted ore, after passing the sorting-room, goes over a sampling mill, and a Vezin sampler cuts out a sample. The ore going through the sampling mill, falls into a bin situated over the west end of the main ore-bins at the railway track. From this bin there is a bucket conveyor, 95 ft. between centres, that distributes the ore into the various bins ready for loading into the railway cars. The regular ore-train running between Rossland and Smelter Junction, consists of twelve 50-ton cars. The system used in loading is that the engine spots the cars under the bins; in this manner the entire train, containing approximately 600 tons of ore, is loaded in from 20 to 30 minutes.

"In the head-works there are also special ore-bins which may be used in connection with, or independent of, the regular ore-bins whenever it is desirable to sample a special lot of ore from any level or any particular working-place in the mine."

Electrolytic Lead Refinery at Trail.

The branch secretary read the following paper, being "A Brief Description of the Consolidated Mining and Smelting Company of Canada's Electrolytic Lead Refinery at Trail, B.C.," which paper was prepared by Mr. John F. Miller, superintendent of the refinery:

The lead refinery of the Consolidated Co. is located at Trail, B. C., near the large copper and lead smelter, owned by the same company.

The buildings and railroad connections pertaining to the plant have been so arranged that the least possible handling of materials is necessary. The buildings are grouped about the tank-room building so that further extensions can be made to the best advantage.

The base bullion to be refined contains about 97 per cent. lead, the remaining 3 per cent. is made up of gold, silver, antimony, arsenic, copper, zinc and traces of other metals.

The base bullion is cast at the lead furnace, where it is produced, into anodes weighing about four hundred pounds each and of the proper shape to hang in the refining tanks. The anodes after being cast at the lead furnace are loaded into anode cars each holding ten anodes. Twenty anode cars are loaded on a railway car and shipped to the refinery.

Arriving at the refinery, the anode cars are run direct to the tank room where they are unloaded by an electric crane of five ton capacity, serving the tank room and melting plant. This crane unloads two cars, or twenty anodes, at a time and places these anodes in any of the two hundred and forty refining tanks. Each refining tank is

thirty inches wide, forty-four inches deep and seven feet four inches long, inside dimensions, made of coast fir four inches thick. This tank just holds the twenty anodes spaced four and one eighth inch centres. There is now placed between the anodes, suspended from a small copper bar, a thin pure lead sheet called the cathode starting sheet. The tank is filled with the electrolyte, a solution containing 12 per cent. hydrofluosilicic acid and 6 per cent. fluosilicate, which is circulated from one tank to the next lower in cascade, the fall being three inches at the rate of thirty-five cubic feet per hour. There are two hundred and forty refining tanks, with a daily capacity of sixty-five tons of pure lead.

A continuous electric current is now passed through the electrodes and the intervening electrolyte for five days. The cathodes are then removed by the crane taking a tank load, or 21 cathodes, each weighing about two hundred pounds, an increase or weight of deposit of one hundred and eighty-four pounds, the cathode sheet weighing sixteen pounds originally. A second set of twenty-one new cathode starting sheets is now suspended between the same anodes and the current continued for five more days. The second crop of cathodes are now removed and it is found that the anodes have been reduced in weight from eight thousand pounds to one thousand two hundred, or 15 per cent. of the original weight. This 15 per cent., called anode scrap,

is now taken out of the refining tank by the crane and washed, to remove the adhering slime which contains the precious metals of the original base bullion. The scrap, after having been washed, is dumped into a steel pot having a capacity of fifty tons of bullion. A centrifugal pump, placed in this pot, pumps the molten bullion from the pot to the "Miller" type vertical water-cooled anode moulds. The anodes are removed from these moulds by a small electric crane, placed in racks, to be loaded direct by crane into refining tanks.

The two crops of cathode lead mentioned above are taken to the melting plant by the electric crane where it is dumped into one of two fifty ton capacity steel pots used only for melting cathode lead. After the lead is melted it is pumped by centrifugal pumps into moulds casting pigs weighing five, ten, one hundred or two hundred pounds, as may be desired. The lead produced is the highest quality, assaying 99.998 per cent. lead.

Located in the melting plant is a five ton capacity pot used for melting lead for making cathode starting sheets on a "Miller" sheet casting machine. This rather interesting little machine is simply an inclined smooth sheet plate the same size as the sheet to be cast, having hinged to the top a trough the same width as the plate. From this the molten lead is poured over the plate, forming a smooth and uniform sheet. Seventy perfect cath-

ode starting sheets per hour are made by this machine.

In the melting plant is located the pipe machine where all sizes of lead pipe are manufactured.

The slime mentioned above, after being removed from the anode, is washed with water to recover the electrolyte to be again used in the refining tanks. The slime, after having been washed and filtered, is dumped into cars trammed into flues from furnaces, where it remains for twenty-four hours, or until it is dried, and roasted by the hot gases passing over the slime. The roasted slime is shovelled from the car into a reverberatory furnace and melted. The resulting metal is 950 to 960 fine fold and silver, called 'dore metal.

The dore metal is now placed in cast-iron kettles, called parting kettles, each having a capacity of seven thousand five hundred ounces of dore metal. Sulphuric acid is added and the whole heated until all the silver contained in the dore metal is dissolved or parted, as it is called, leaving the gold at the bottom of the kettle as a fine powder. The gold is now removed, cleaned, washed, dried, melted and cast into a bar assaying 995 fine or better. The solution of silver sulphate is syphoned into lead-lined tanks, where it is boiled in the presence of copper plates. The silver is precipitated and the copper goes into solution as copper sulphate. The silver is washed, filtered and charged to a reverbera-

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tory furnace, holding 100,000 ounces, where it is melted and cast into bars weighing 1,050 ounces for the Mint, or 1,250 for the Chinese trade. The silver assays 999.54 fine.

The solution of copper sulphate produced in precipitating the silver is pumped to the blue vitriol plant, where it is evaporated, crystallized and recrystallized until pure. The copper sulphate, bluestone or blue vitriol is now packed in barrels for shipment, finding a ready market for use by fruit growers, railways and wheat farmers.

Copper-Smelting Plant at Trail.

A paper, descriptive of "The Copper-Smelting Department of the Consolidated Mining and Smelting Company of Canada's Smelting Works at Trail, B.C.," by Mr. James Buchanan, superintendent, was, at the request of the chairman, read by Mr. Fowler, as under:

"The ore treated in the Consolidated Mining and Smelting Co.'s blast-furnaces at Trail is chiefly from the company's mines at Rossland, B.C. The following is an approximate analysis of this ore:

	Per cent.
Iron	17.0
Silica	44.0
Lime	5.5
Alumina	15.5
Sulphur	8.0
Magnesia	3.5

"On delivery at the smelter the ore is first weighed over a Fairbanks 100-ton recording scale and then dumped into the bunkers of the copper-sampling mill.

"Sampling—The bunkers have a capacity of 1,700 tons, three of them delivering direct, and the others by means of a 36-in. pan conveyor (driven by a 20-h.p. induction motor), to a No. 8 McCully crusher. From the crusher the ore is elevated by a 33-in. manganese-steel link-belt bucket-elevator and discharged—over a 76-in. Vezin sampler which cuts 10 per cent. of the whole, the reject going to the mill bins and the sample through a No. 4 McCully crusher over a 48-in. Vezin sampler where a 20 per cent. cut is taken. This is crushed in a 7 by 10 Blake crusher, which delivers to a 9-in. bucket elevator discharging over a 36-in. Vezin sampler, the latter cutting out 25 per cent. to 14 by 30 rolls; then over another 36-in. Vezin sampler, which cuts 10 per cent. to 14 by 24 rolls. The sample is then passed through a 9 by 20 sample-grinder, cut down by Jones riffles, and sent to the bucking room.

"The No. 8 McCully crusher is driven by a 100-h.p. motor and the other machinery of the mill by a 50-h.p. motor.

"Practice—Ore is hauled in trains from the sampling mill by a Jeffrey electric trolley-locomotive and dumped into the furnace charge-bins. It is smelted with 30 per cent. of its weight of limestone and 16 per cent. of Crowsnest coke.

"For each furnace there is a Jeffrey locomotive, which brings in the charge-train. This consists of three cars of ore (3,000 lb. of ore to the charge), one of lime rock, and one of coke. To charge the furnace, the feeder tilts one car at a time on to the feed-plate and the locomotive pulls the car the entire length of the furnace as the contents run out, thereby obtaining an even distribution of the charge. Matte from this charge assays from 5 to 10 per cent. copper.

"About the beginning of 1912, experiments were begun to smelt the raw matte pyritically, to take the place of the former more expensive method of roasting and sintering, and if possible without any material alteration to the furnaces already installed.

"The smallest furnace, dimensions 42 by 240 in., was blown in on a charge consisting of matte 2500 lb., siliceous ore 1500 lb., lime-rock 12 per cent., and coke 3 per cent. The furnace was blown out after having been in blast 12 hours, as it ran so fast the matte-tappers could not keep the matte down in the settlers. It was decided to cut the furnace in two, and this was accordingly done, making the area at the tuyeres 42 by 120 in. The smaller furnace was then blown in on the same charge, the coke being shovelled in and the remainder of the charge dumped in from the side and distributed along the furnace by the locomotive in the same manner as for the ore-furnaces. The matte on charge was coarse, about 6 in., while the siliceous ore available was very fine, 50 per cent. passing through 1-4 in. screen.

"The furnace ran on this charge for two days, but never got properly heated owing to the looseness and shallow depth of the charge. The next run was tried with a heavier charge and with matte crushed to 2 in., and while this acted better, the sides of the furnace rapidly crusted, owing to the fine nature of the siliceous ore. After several attempts with long-nosed cars and distributing plates to try to get the charge into the centre of the furnace, it was decided to take the ends out of the hood and feed the furnace along the centre with bottom-dump cars. This method proved successful.

"Two charge-cars are used and the charge of 4200 lb. matte, 2000 lb. siliceous ore, 13.5 per cent. lime-rock, and 4 per cent. coke, is divided equally between the two.

"The coke is fed by shovelling and the remainder of the charge is weighed in the cars—matte first, then ore, and the lime-rock on top. If the furnace shows signs of crusting, the matte is weighed on top of the ore for a time, thereby throwing more matte along the sides, which invariably has the desired effect of cutting out the crust.

"The matte is concentrated twice in this furnace, the first concentration running from 15 to 20 per cent. copper, equivalent to from 2.5 to 3 into 1. This matte is returned to the furnace and smelted with sufficient low-grade matte to keep the grade around 40 per cent. copper for the second concentration. All

the matte is tapped into 1 1-2 ton Kilker matte-cars (five of which are used), cooled, and hauled by electric trolley-locomotive to the crushing plant.

"The pans of the matte-car dump direct into a 10 by 20-in. jaw-crusher which feeds on to a pan-conveyor discharging into three iron bins, whence the matte is drawn into V-shaped cars and hauled to the charge-bins or shipped to Tacoma for converting, according to grade.

"The slag from the ore-furnaces assays approximately:

	Per cent.
"Ferro oxide	14.5 to 16.0
Silica	40.0 to 47.0
Lime	18.0 to 22.0
Magnesia	1.5 to 3.0
Alumina	14.0 to 16.5
Sulphur	Trace

and the slag from the pyritic-furnace runs, approximately:

Ferro oxide	45.0 to 50.0
Silica	35.0
Lime	12.0

"The slag from the ore-furnaces is granulated and sluiced to the dump, while that from the pyritic-furnace is caught in pots and used as a flux in the lead-furnace.

"**Blast-Furnace Plant**—The furnace building is of steel, dimensions 70 by 263 ft. In it there are five blast-furnaces of the following dimensions and capacity:

Dimensions	Capacity tons daily
2 furnaces 300x42in. at tuyeres each	400
1 furnace 26x42in. at tuyeres each	350
2 furnaces 240x42in. at tuyeres each	250

"The principal dimensions of the 42 by 300-in. furnaces are:

Size, 42 by 300 in.
Hearth area, 87.5 sq. ft.
Centre line of tuyeres to feed-floor, 102 in.
Centre-line of tuyeres to tapping-floor, 66 in.
Height of jackets, 90 in. plus 37 in.
Centre-line of tuyeres to lower line of bosh, 10 in.
Centre-line of tuyeres to upper line of bosh, 56 in.
Bosh, in inches, 10.
Width lower side jackets, 60 in.
Width lower end jackets, 57 in.
Number of tuyeres, 40.
Diameter of tuyeres, 6 in. in jacket.
Tuyere opening, 4 ft. 2 in.
Centre-line to centre-line tuyeres, 15 in.

Area tuyeres in sq. in., 554.
Sq. in. tuyere opening per sq. ft. hearth area, 6.27 in.
Water-space in jackets, 4 1/4 in.
Plate used—inside, 3/4 in.; outside, 1/4 in.

"Each furnace is fitted with a water-jacketted iron trap-spout and has two water-jacketted settlers. The trap-spout is made of $\frac{1}{4}$ in. plate, and the nose of the spout is protected by a water-cooled copper pipe.

"Blast delivered to furnaces at 32 to 34-oz. pressure is supplied by six blowers, as follows:

Onc No.	11 Roots	Displacement		R.p.m.	Driven by motors
		cu. ft.			
		300		110	Two of 200 h.p. each
"	" 9 $\frac{1}{2}$ "	200		120	" " 300 " "
"	" 9 "	125		130	" " 200 " "
"	" 8 "	111		124	" " 150 " "
"	" 8 Connorsville	100		140	" " 150 " "
"	" 7 $\frac{1}{2}$ "	86		124	" " 150 " "

"Flue-dust is collected in a 20-ft. by 10-ft. brick flue, 750 ft. long, and is briquetted in a Chisholm, Boyd & White briquetting machine, using 5 per cent. of lime as a binder, the briquettes being returned and smelted in the low-grade furnaces."

Adjournment.

After votes of thanks had been passed to the several contributors of papers, the meeting was adjourned until the next evening.

VISITS TO MINES AND SMELTERY.

On Friday morning, 23rd, the visitors were taken down the Centre Star mine and shown some of the workings and ore-bodies in that and adjacent mines of the group. Of course, only a very small part of the extensive workings was seen, for the aggregate footage of development work underground in the Centre Star group is more than 30 miles, and there is fully 14 miles in the adjoining Le Roi mine, also owned by the Consolidated Co. The big hoisting-engine, electrically-operated compressors, ore-handling and sorting plant, machine and other shops, and various other plant and machinery, were seen, and then the assay and general offices were visited. In the latter a glass model of the Centre Star and War Eagle mines proved an object of especial interest.

After luncheon, the party was taken in automobiles down to Trail, where the afternoon was spent in examining the Consolidated Co.'s extensive works, including the copper and lead-smelting plant, this having many modern features and employing up-to-date methods of handling and reducing ores and matte; and the electrolytic refinery. This visit was the more interesting and instructive from the fact that informative papers by the smeltery and refinery superintendents, respectively, had been read the evening before, so that the visitors had previously had the benefit of hearing read concise descriptions of the works.

At the mines, Mr. M. E. Purcell, superintendent; Mr. E. G. Montgomery, assistant superintendent; Mr. Fred S. Peters, superintendent of the Le Roi, and several heads of departments, were most assiduous in their attention to the

visitors, while at the smeltery and refinery, Mr. R. H. Stewart, general manager; Mr. S. G. Blaylock, assistant general manager, Mr. James Buchanan, superintendent of the smeltery; Mr. J. F. Miller, superintendent of the refinery; and other officials, also did all in their power to make the visitors enjoy their visit to these works, the pro-

duction record of which during 16 years, to July 1, 1912, is as follows: Ore smelted, 3,143,927 tons. Metals produced: Gold, 1,146,912 oz.; silver, 20,224,623 oz.; lead, 250,970,644 lb.; copper, 50,789,983 lb.; gross value, \$52,167,004. It is expected that by the end of the current fiscal year—June 30, 1913—the aggregate gross value will have reached the large sum of about \$57,000,000.

FRIDAY EVENING SESSION.

The second session, held on Friday evening, May 23, was even better attended than was the first, for while about 50 were present the first evening, there were at least 70 at the second session, more of the men from the mines having put in appearance. Several addresses of welcome were given before the ordinary business was taken up. The Rossland "Miner" reported these as follows:

Welcomed the Visitors.

"Mr. M. E. Purcell, the chairman, called the meeting to order and asked Mayor Deschamps to speak, and he, in a pleasant manner, warmly welcomed the visitors to the city. Although the city could not offer as many forms of entertainment as it used to in the early days, still the best to be had was at the disposal of the visitors. For himself, he had been sawing wood here for the past sixteen years, and was still doing so. He said he knew nothing about mining, but men older in the camp than he was would tell them all about the industry. The people here, he continued, talk of fruit, general farming, and lumber, but the great industry is mining. In conclusion, he said, if any of the visitors wanted anything while here they could call on the mayor.

"Mr. A. S. Goodeve, railway commissioner, was in a characteristically eloquent mood, saying it had been his good fortune to have filled the office of mayor which is now filled by Mr. Deschamps, the previous speaker, and, as he had said, mining was the great basic industry. Mining engineers, without much outward show or fuss, are solving great problems of the time. They are wrestling from Nature her hidden secrets. There is no money, he said, so clean as that taken from the earth.

There is no competition in mining and no rivalry. If one mine is taking out many times more than that of another mine there is no hurtful competition in it. He was glad to welcome the visiting engineers, members of a great and useful fraternity. Lode-mining, so far as B.C. is concerned, practically started here. Then the people of the Dominion had but little knowledge of mining, but since then the great universities of Eastern Canada have been turning out men who are capable of filling positions in this great basic industry. Mr. Goodeve touched on the railways of Canada, saying that from the first railway, 16 miles in length, the railway system had been extended until there are now 22,000 miles of railway, employing 140,000 men, with an immense payroll. Canada has jumped to the fourth place in the production of silver, but this was largely due to Cobalt, and we stand high in the production of gold, copper and silver in other portions of the Dominion. He alluded to the practically illimitable coal deposits in the Rocky Mountains. We had our first mining excitement, and that had passed away, and we are still mining. We are producing greater quantities of mineral than ever, and the future would see large increases over the present. In conclusion, he told the visitors that if they had gained anything by their observations of the local mines he and the residents of Rossland would greatly rejoice.

"Mr. L. A. Campbell, M.P.P. for Rossland, said: No doubt the visiting engineers were surprised at what they had seen in the mines, and at the reduction works at Trail. The Rossland camp was opened by the people from the south of the line. They worked up to a certain point, and, because they believed the ore value was not persistent at depth, they sold out to Englishmen, and the latter had afterward parted with the properties to Canadians. It seemed to him, on comparing the mining area of Canada with that of the United States and Mexico, that the Dominion has the larger area. It was mined a little only on its fringes and its possibilities are great. Canadians have made a great success in Rossland camp and elsewhere, and they will also develop large mines in the North. The Granby Co. is already doing this, as well as others. He believed that there was lots of room for mine exploitation in this and other portions of the country, and would like to see the Americans come to British Columbia again and aid in the mining development. Now that the boom in town lots and real estate is about over, he expected that investment in mining will be actively renewed, and then this and other mining centres will see more of the mining engineers and others from the side of the boundary.

"Chairman Purcell thanked Mr. Campbell for his talk. The glad hand was held out to the visitors on the present occasion, and he hoped that they would return and spend money in the mines; thus the people here would receive some of the money which had been made by Americans here and taken across the line."

Mr. Thos. Armstrong briefly acknowledged the kindness so freely extended to the visitors from Spokane and other places south of the International Boundary line, and said that what they had seen in the mines and the smelting works and refinery had indeed been a revelation to those of their number who had not previously visited them. They had been well repaid for having attended this joint meeting of members of the two institutes and he sincerely hoped other similar meetings would be held in the future.

Mining in British Columbia.

The following "Brief Review of Mining in British Columbia," during the year he had filled the office of chairman of the Western Branch, was prepared by Mr. Purcell, but there was not time for it to be read at the meeting, so it was handed to the branch secretary for inclusion in the account of the proceedings:

power commensurate with the company's enlarged operations.

"In the Interior. The old producing mines of Boundary district, namely, those of the Granby Consolidated Co., in Phoenix camp, and the British Columbia Copper Co., near Greenwood, as indicated by the published reports of those companies, have maintained a steady, vigorous, and profitable ore-production.

"In Slocan district, the production of silver, lead, and zinc has increased over that of previous years. The development of bonanza orebodies in the Standard and other mines, and recent opening of high-grade ore in other parts of the silvery Slocan, promise well for a large and well-sustained output of ore for a lengthy period.

"In Ainsworth camp, there is renewed activity at the Highland and No. 1, which properties are being operated by the Consolidated Mining and Smelting

management of the Queen mine, but this is now in a fair way toward settlement.

"Rossland mines have been in continuous operation throughout the year. The total output of ore was approximately 244,000 tons, the chief shipping mines having been the Centre Star group, Le Roi, and Le Roi No. 2 group. Beside shipping 18,000 tons of crude ore, the last mentioned concentrated some 17,000 tons and its milling operations resulted in a production of 1658 tons of gold-copper concentrate.

"The total gross value of the ore produced from Rossland mines in all years from 1893 to date has been in excess of \$55,000,000, and it is evident from present indications that there will be a regular production of ore from these mines for many years to come.

"In Hedley camp, Similkameen, too, the output has been satisfactory, the Hedley Gold Mining Co. having produced between \$700,000 and \$800,000 in



Outcrop of 6½-ft. Seam of Coal, Bear River, Cariboo, B. C.

"A brief review of mining in the province during the year shows that there has been a substantial increase in the production of the metalliferous mines. There was also a considerably larger production of coal, and this notwithstanding the fact that the output from some of the coal mines on Vancouver island was retarded owing to disagreement between mineowners and the United Mine Workers of America.

"In the Coast District. The Granby Consolidated Co. has been actively engaged in developing and equipping its new holdings near Granby bay, Observatory inlet.

"The Britannia Mining and Smelting Co. employs in its mining and milling operations on Britannia mountain and at Britannia Beach, Howe sound, between 600 and 700 men. Ore is now being developed there and extracted on a larger scale than at any previous time. A modern concentration plant is being installed, and hydro-electric power developed to provide additional

Co. The Silver Hoard, also in this camp, is being energetically developed by some Spokane capitalists. Across Kootenay lake from Ainsworth, the old Bluebell lead mine, under the capable management of Mr. S. S. Fowler, has again become a regular ore-producer.

"In Nelson district, the Silver King mine, recently purchased by the Consolidated Mining and Smelting Co., is being placed in working condition as fast as possible, and this old-time producer is expected to soon again be on the list of shipping mines. The Molly Gibson, on Kokanee Creek, another of the Consolidated Co.'s properties, the long aerial tramway from which was damaged by snowslides last winter, is now having necessary repairs made preliminary to resuming production of silver-lead ore.

"In Sheep Creek camp, the Motherlode gold-mine has been steadily operated all through the winter; also the Queen gold and Emerald lead mines. There has been disagreement over a wages question between the miners and the

gold, and paid dividends totalling \$360,000 for the year, or at the rate of 30 per cent. on its issued capital.

"The adoption of modern methods of mining and smelting has resulted favorably, while the application of electric power to air compression, pumping, hoisting, and ore-haulage, has facilitated extensive lateral development and the exploitation of large bodies of low-grade ores such as in the earlier experience of mining in the province and the use of mining methods then in vogue would have been commercially impossible.

"Coal Mining.—The production of coal has assumed comparatively large proportions in the province. Preliminary returns show that there was last year a gross output of 3,066,000 long tons against 2,298,000 tons in 1911, this giving an increase of 768,000 tons. The quantity of coke made was about 265,000 long tons, the whole of which was from coal mined in the Crow's Nest district in southeastern British Columbia.

"General.—The net profits of metalliferous mining companies operating in British Columbia in 1912 were not less than \$3,000,000.

"The aggregate value of mineral production of the province for all years to the end of 1912 has been approximately \$430,303. The greater progress of recent years may be better recognized if some comparisons be made. The provincial mineralogist, in his preliminary report for 1912, gave the following figures: The aggregate value of all minerals produced in 51 years, 1852-1903, was \$18,729,000; in ten years, 1903-1912, it was about \$240,574,000. These figures show that nearly 57 per cent. of the aggregate production of 61 years was made in the ten years last past, leaving but little more than 43 per cent. for the 51 years that went before. It is, therefore, plainly evident that there has been progress of a very substantial character during the last decade. Bringing the comparison nearer to the present time it may be further shown that the proportion of the last five-year period, 1908-1912, was \$130,776,000, as against \$109,798,000 for the corresponding period, 1903-1907. It is a striking fact that of the value of the mineral production for the whole period of 61 years for which statistics are available, more than 30 per cent., or nearly one-third, was the production of the last five years. This is surely convincing evidence of the substantial and gratifying progress that is being made by the mining industry of British Columbia."

Aggregate Production of Rossland Mines.

From a number of the Rossland "Miner," published while the meeting of the local sections of the two institutes was being held, it is learned that the aggregate production of the mines of Trail Creek mining division, practically all from Rossland camp mines, during the 19 years over which production from these mines has been spread, has been 4,104,228 tons of ore, containing 2,018,152 oz. gold, 3,383,951 oz. silver, and 86,838,170 lb. copper, together having a gross value of \$55,577,452. The revised figures for the year 1912 were as follows: Ore produced, 243,870 tons, containing 132,073 oz. gold, 87,530 oz. silver, and 2,539,900 lb. copper, together having a gross value of \$3,196,037. The average gross value of the production of the last five years has been more than \$3,000,000 a year. It is noteworthy, too, that of the aggregate production of lode-gold in British Columbia in all years—3,438,849 oz.—about 59 per cent. came from Rossland mines. It is of interest, also, as bearing out the truth of last year's reports of an increase in the gold value of the ore mined, that while the average gold content of 1,333,531 tons of ore mined in five years, 1907-1911, was 0.441 oz. per ton, that mined in 1912 averaged within a small fraction of 0.540 oz. per ton, and this notwithstanding that in one important mine there was a marked decrease in the gold content of the ore mined last year in that particular mine. There is believed to be good reason to look for a rather

higher average gold content in the ore mined in 1913.

Two More Papers Presented.

Professor McCaffery presented a paper entitled "The Effect of Lime on the Solubility of Silver in Cyanide Solutions," which had been prepared by Mr. H. W. Foester, of Nampa, Idaho. As it was of a technical nature, its contents were briefly outlined and then, at Professor McCaffery's suggestion, it was taken as read.

Similarly, a paper by Mr. Chas. J. Murphy, of Fernie, B. C., chief engineer for the Crow's Nest Pass Coal Co., entitled "Mining and Metallurgy as Practised in the Sudbury Nickel Fields, Ontario," was presented by the branch secretary, who gave a short synopsis of it and, as time was short, suggested that it be read by title, which was done.

Metal-Mine Accidents and First Aid.

Mr. E. Jacobs said that he had compiled from various sources some information relative to the subjects of "Metal-Mine Accidents" and "First Aid to the Injured," the importance of attention to which matters is gradually being generally recognized. He mentioned having heard a most interesting and instructive address, illustrated by many effective lantern-slide views, made by Dr. W. H. Tolman, of New York, director of the American Museum of Safety, before the 1912 Annual Meeting of the Canadian Mining Institute, and afterward he had visited the Museum of Safety in New York. He now had before him a technical paper on "Metal Mine Accidents in the United States During 1911," issued by the United States Bureau of Mines, which paper contained much statistical and general information concerning metal-mine accidents. There had recently been sent out from Pittsburgh, Pennsylvania, a printed circular showing the purpose of the "American Mine Safety Association," which is designed "to conserve the lives and health of miners and reduce property loss." He had with him, too, a synopsis of the New Zealand Safety Commission Report, printed in *The Engineering and Mining Journal*, New York, of April 26, ultimo. Then there were as well several papers printed in volumes of the *Journal of the Canadian Mining Institute*, from which he had obtained notes. But since it was desired to adjourn that meeting early, he would read only some brief extracts from the considerable amount of information he had gathered. Accordingly Mr. Jacobs shortly summarized the information he had before him. As, however, these matters are of considerable importance, fuller particulars are now given:

"The available data concerning accidents in connection with metal and miscellaneous mineral mining in the United States are deplorably incomplete. . ."

"The most striking fact brought out in the data published in this paper is the fact that in proportion to the number of employees the fatal accidents in metal mines exceed those in coal mines.

This fact is all the more notable when it is understood that in the metal mines there is an entire absence of the gas and dust explosions that in coal mines caused from 12.75 per cent., in 1912, to 28 per cent. in 1907, of the total fatalities."

The first extracts quoted were from Technical Paper No. 40, "Metal-Mine Accidents in the United States During 1911," as under:

"Fatal accidents in the metal mines of the United States are more numerous in proportion to the number of men employed than are the fatal accidents in coal mines. This fact is brought out by the figures collected by the Bureau of Mines and presented in this paper. Of the 165,979 men employed in the metal mines in the United States during the calendar year 1911, 695 were killed, which represents a rate of 4.19 per 1000 men employed, as compared with 3.73 per 1000 for the coal mines of this country for the same period, and 3.15 per 1000 in the coal mines during the year 1912. The fatality rate due to accidents in the metal mines in a number of foreign countries is as follows: Transvaal, 4.29 per 1000 men employed; France, 3.16; Spain, 2.25; Australian colonies, ranging from 0.67 to 2.23; Great Britain 1.64; Japan, 1.59; Germany, 1.39; India, including coal mines, 1.18. The death rate in Mexico and Peru is much higher than in the United States, the rate being 5.78 per 1000 for each country, but it includes the accidents in the coal mines."

"(Note.—Later information is as follows: Since the average number of days worked in the metal and non-metal mines (excepting coal) group was 282 as compared with 220 days in the coal mines group, the rates are not truly comparable. Taking 300 days as the average number of working days in a year and calculating all groups on this basis, the death rate would be 4.45 per 1000 employed for the former, and 5.09 for the coal mines.)"

The next excerpt was from the "Journal of the Canadian Mining Institute," Vol. XII, 1909, p. 324-5. A paper by Mr. E. T. Corkill, of the Ontario Bureau of Mines, read at the Montreal meeting of the Canadian Mining Institute in March, 1909, had the following as its introductory sentences:

"The prevention of accidents in mines has been the subject of much controversy, both among mining men and by commissions appointed by the governments of various countries. Most of the commissions appointed have studied the subject chiefly in connection with coal mines, and incidentally touched on metalliferous mining. This has probably been due to the fact that more men are employed in coal mining, and that when an accident occurs in a coal mine from an explosion a large number of men are killed. When this happens the press in every country calls attention to the accident, enlarges upon it, incites the people to the great danger of the occupation, and accordingly the government of the country in which the accident occurs is compelled to instigate an investigation.

"In metalliferous mining an accident seldom occurs in which a considerable number of men are killed, the fatalities usually being one or two at a time, though in the course of a year they may amount to a large total. Public opinion is, therefore, not aroused; the management of the mine is not so impressed with the importance of careful supervision; the miners are aroused for a few days and then forget, and the same conditions prevail as before. It is a common belief among most metal miners that the fatalities in coal mines far exceed those in metalliferous mines. This is a great mistake, and, while it is not proposed to argue that metal mining is as hazardous a calling as coal mining, still the writer desires to impress upon all metal miners that only care and close supervision of their work will lessen the number of accidents and place metalliferous mining on the list of the less hazardous occupations.

"In the United Kingdom the death rate per thousand men employed in 1907 in metalliferous mines was 1.08 while in the coal mines it was 1.46. The average death rate for the ten years from 1898 to 1907 in the coal mines was 1.40 per thousand, and in the metalliferous mines 1.14 per thousand. This shows that 0.23 more men per thousand were killed in the coal mines than in the metalliferous mines. In the German Empire the death rate in 1906 in coal mines was 1.70 per thousand men employed, and in metalliferous mines 1.29. In the United States in 1906 the death rate in coal mines was 3.21 per thousand, while in the same year in metalliferous mines in the States of Colorado, Michigan, Missouri, and Montana, the rate was 3.22 per thousand. This shows that the percentage of accidents in metalliferous mines in those states in that year was slightly greater than in coal mines."

(Note.—Statistics for the year 1911, published by the United States Bureau of Mines, show for each of the above-mentioned states a higher death rate than in 1906). Mr. Albert H. Fav, in Technical Paper No. 40, says, in part: "It will be noted that the total number of men employed in the coal mines of the United States in 1911 was 728,348 as compared with 165,979 in the metal mines. The total number killed in the coal mines was 2719 as compared with 695 in the metal mines. . . . The majority of states have established systematic coal-mine inspection, which tends to reduce accidents; whereas in many of the states where metal-mining is carried on there has been no inspection of mines, and in some states there has not been adequate inspection of metallurgical plants, rolling mills, refineries, etc., which employ in the aggregate nearly 1,000,000 men.

In British Columbia—turning to British Columbia, it was stated that the number of fatal accidents in the metal-mines of the province in ten years, 1902-1911, had been as shown in the following table:

Year	No. of Fatalities	Death rate per 1000 employed
1902	13	Not shown
1903	18	Not shown
1904	14	4.24
1905	24	3.89
1906	17	4.61
1907	20	5.4
1908	21	5.93
1909	15	4.9
1910	13	4.19
1911	17	5.24

The death rate for 1912 has not yet been published; it is probably lower than for 1912 in the metal mines.

It should be noted that in British Columbia the average death rate is higher in the coal mines than in the metal mines, which would make it appear that in this respect this province makes a better showing than do some of the metal-mining states to the south of us. The average death rate in the British coal mines for ten years, 1902-1911, was 8.16 per 1000 men employed; for the ten years, 1903-1912, however, it was lower, namely, 4.34 per 1000 employed. The number of fatalities in 1902 was abnormally high, hence the considerable improvement when that year dropped out of the last ten-year period taken in account, as above.

While he was addressing coal-miners, not metal-miners, some words spoken by the chief inspector of mines, Mr. Thos. Graham, at the meeting of the Western Branch of the Canadian Mining Institute held at Nanaimo a few weeks ago, may well be seriously considered by the latter. Speaking on the subject of certain accidents, Mr. Graham said: "Legislation, however stringent, or supervision, however efficient, will not prevent this class of accidents. Here, so much depends upon the personal element that only by the co-operation of every person concerned, from the mine inspector and the manager down to the trapper boy, can it be hoped to reduce to a minimum the number of accidents from falls of roof and coal. At such a meeting as we have tonight, at which are present so many firebosses and shotlighters, it is an opportune time to urge upon them the great necessity that exists for their unremitting co-operation, for they come daily into closer contact with all underground employees than do other mine officials; so that an occasional word of advice, warning, or admonition from them is likely to do much toward reducing the number of fatal accidents from the causes just mentioned, as well as from haulage." Similarly, there are many preventable accidents occurring frequently in metal-mines, so that here, too, more carefulness all round is certainly desirable.

New Zealand Safety Commission Report—Last month The Engineering and Mining Journal, New York, printed (on April 26, p. 841) an article from which the following has been taken:

The general recommendations of the New Zealand Royal Commission on Mines, appointed in 1911 to inquire into the report on the conditions relating to the health and safety of miners, are:

(1) That the maximum height of stopes should be 8 ft. 6 in., measured from the ordinary level of the working floor of that stope.

(2) If required in the opinion of the mines inspector, all ladderways in constant use for travelling should be lighted by fixed lights in the event of its being difficult to carry an open light.

(3) Sufficient space should be made in all levels at convenient intervals for men to pass trucks.

(4) Speaking-tubes or other method of communication should be provided between levels and shafts or levels and stopes, if more than 50 ft. in height.

(5) All ladders in mines should extend for at least three feet above the top of the shaft, platform, or landing place.

(6) There should be at least two shafts or outlets to the surface, with which every lode or mineral bed being worked should have a communication not less than three feet wide and three feet high; the outlets not to be at any point nearer to one another than 30 ft.

(7) The use of all tamping other than plastic clay and water should be prohibited; also the use of instantaneous fuses and the practice of charging a number of holes when it is intended to fire only a few at a time.

(8) The adoption of the recommendation of the Transvaal mining commission is advised; this reads: Every working place where rock drills are in use shall be furnished with a James water blast or suitable appliance for laying and removing the dust, smoke, and gases after a blast, and no man shall return to an end, rise, winze, or other close place until the air is free from dust, smoke, and fumes caused by blasting.

(9) Adequate coverings or penthouses should be provided, extending over the whole area of shafts in course of sinking, sufficient space only being left therein for the passage of any sinking cage, skip, bucket, or other means of conveyance; such covering to be situated not more than 50 ft. from the shaft bottom in the case of vertical shafts, or not more than 100 ft. in the case of steeply inclined shafts.

(10) It should be an offence for men to carry tools or timber in ladderways; to throw tools or timber down ladderways; or to take explosives with them on cages.

(11) Whenever possible, dredging and other machinery should be oiled, repaired, or adjusted when stationary, and when the conditions do not admit of this, the work should be done by a competent or experienced person. No person engaged in proximity to dredge or mining machinery should wear loose or flowing clothing.

(12) Boilers more than ten years old should be subjected to a hydraulic test.

(13) Pawls and ratchet wheels should be fitted to all mine windlasses, and

windlasses or other suitable appliances should be erected in stopes for the purpose of raising tools and timber.

The Engineering and Mining Journal also published a summary of the commission's findings in regard to ventilation, circulation of air for cooling workings, and preventive measures for miners' phthisis.

First-Aid to the Injured.

Passing on to the second subject under notice, Mr. Jacobs mentioned he had attended a First-Aid demonstration and competition in Victoria last year, carried out before Their Royal Highnesses the Duke and Duchess of Connaught. Later he had been invited to join the executive committee of the Victoria centre of the Canadian Branch of the St. John Ambulance Association, and had since been deeply impressed with the great value of the work being done in Canada by the numerous centres spread over the Dominion. He had taken from one of the Annual Reports of the Canadian Branch of the association the following information on "How to Form a Local Centre or Class:"

"The best way to begin the work of interesting the citizens of your locality in the work of instruction in First-Aid is to form a Local Centre. This body will have the administration of the work of your neighborhood, and all the classes held will report through this centre to the Provincial Board. The success of this first move is important, and it is suggested that a public meeting be called some afternoon or evening (whichever you think best), to which you should invite, through the mails, the most prominent men and women in your locality. At this meeting you will explain why the meeting is called, and the objects of the St. John Ambulance Association, which are summarized as follows:

"(a) The instruction of persons in rendering First-Aid in cases of accidents or sudden illness, and in the transport of the sick and injured.

"(b) The instruction of persons in the elementary principles and practice of nursing, and of hygiene and sanitation.

"(c) The manufacture and distribution by sale or presentation of ambulance material, and the formation of ambulance depots in mines, factories, and other centres of industry and traffic.

"(d) The organization of Ambulance Corps, Invalid Transport Corps, and Nursing Corps;

"(e) And, generally, the promotion of instruction and carrying out works for the relief of suffering of the sick and injured in peace and war, independently of class, nationality, or denomination.

"An effort should be made to have some prominent man accept the chairmanship, and for the post of honorary secretary a young man should be chosen who will be aggressive in his

work, for much of the success of your centre will depend upon this officer's success in arranging classes in all branches of trade and commerce, clubs, women's organizations, and in fact everywhere possible.

"I may not wait," continued Mr. Jacobs, "to go into detailed information relative to these matters, but have no doubt that anyone interested in them will be supplied with a copy of the Constitution and General Regulations—Pamphlet No. 1—on application to Major F. C. McTavish, M.D., of 884 Bute Street, Vancouver, who is honorary secretary to the Provincial Council of British Columbia.

"Concerning the work of the St. John Ambulance Association in this province, I may mention that the Canadian Pacific Railway Co. employs its own instructors in St. John Ambulance First-Aid work. Addressing a meeting of the Western Branch of the Canadian Mining Institute at Nanaimo on March 5th last, Mr. P. B. Ashbridge, the railway company's instructor of its employees west of Winnipeg (who has instructed among hundreds of others, Sir Wm. Whyte, Mr. F. W. Peters, and other high officials of the company), stated that St. John Ambulance Association classes had been instituted a hundred years ago, since which time many thousands of people have been given instruction in First-Aid work. The work was now assuming large proportions as could be gleaned from the fact that 4000 men employed by the Canadian Pacific Railway west of Winnipeg had received First-Aid instruction, and 3700 of these had successfully passed the examinations held after the instruction had been given. Seven thousand accident cases on the C. P. R. had been treated on the spot by the company's own employees, familiar with First-Aid work, the more serious cases only requiring the removal of sufferers to the hospital. . . First-Aid work was a good thing for all. The employer should have it for the sake of the employee; the employee should have it for his own sake; and everybody should have it for the sake of humanity.

"I may add that at the same meeting, Mr. J. F. Menzies, of Roslyn, Washington, general superintendent for the Northwestern Improvement Co., Coal Department, read a paper on "Mine-Rescue and First-Aid Work." In regard to the latter he said:

"We have all seen the needless sacrifice of life, and the permanent maiming of miners, that has resulted from the lack of knowledge of what to do and how to do it in times of emergency. This has been and is a source of great anxiety to the sympathetic mine manager. Death from hemorrhage and shock, wounds infected, simple fractures made compound, and much avoidable suffering caused to injured miners. But, happily, the First-Aid team has changed all this. The injured one is bandaged up, his broken bones are splinted, and he is treated for shock and otherwise made comfortable, and is handled carefully.

"What a satisfaction to the First-Aid man it must be to know that he has relieved a fellow-worker or friend and made him comfortable. No sitting around powerless, waiting for death to release the poor sufferer. Now the hemorrhage is stanchied, the man made comfortable, kept warm, and carefully carried to the doctor.

"At Roslyn, we have equipped our men with First-Aid packets, and our mines with First-Aid boxes, military stretchers, and heavy warm blankets, all in water-tight galvanized iron cases. We have found that First-Aid work goes admirably with rescue training work. It furnishes a very attractive and instructive study, making the rescue training more interesting and lightening its drudgery, so that we now call our corps at Roslyn 'First-Aid and Rescue Corps.' We have eight corps, consisting of about 100 men fully trained in First-Aid and mine-rescue work; 69 of this number hold either foremen's, fire-bosses', Draeger, or Red Cross certificates. These 69 we call our Roll of Honor men; 53 of them hold U. S. Government rescue certificates, and 33 Government Red Cross certificates.

"We sent a crew of men to the First National Mine-Safety Demonstration at Pittsburg, Pennsylvania, held on October 30, 1911, where they received honorable mention, and were the only crew whose picture was published in the Government report.

"Last September we sent a crew to the Montana State Fair, at Helena, where they carried off the honors and a beautiful copper loving-cup. In picking a team to represent the company at a contest, we hold an open competition; the only requirements are that each competitor hold a Red Cross and a rescue certificate, which insures that all members of the crew understand the technique of the work. We give out at the test six single-stunt features for the men to perform—one man at a time before three judges, who mark them on all points. The five men securing the highest marking are taken to make up the team. Then they are trained in team work until they become thoroughly proficient and work well together. The members of the team we send are presented with a Red Cross button; if one of the crew has taken part in a previous contest, a bar is added to his button. This creates a great deal of interest and friendly rivalry, and tends to make the men work for the greatest proficiency.

"We are all proud of our First-Aid and Rescue Corps, and this summer we expect to enlarge the work and build a new station at Roslyn, and an auxiliary station at Cle Elum."

"Now, I should have liked much to give you information concerning what has been and is being done in organized First-Aid work in connection with the larger metal-mines of this province, but, unfortunately, I do not know of any similar movement to that I have just told you of as at Roslyn, Washington. Good work is certainly being done at some of the coal-mining centres but

not, so far as I have heard, in the larger metalliferous-mining camps. I see by the last annual report of the St. John Ambulance Association for Canada, that centres have been organized in Vancouver, Victoria, and New Westminster, which are the chief Coast cities of British Columbia, and others at Nanaimo, South Wellington, Ladysmith, Cumberland, Powell River, and Michel—all, except Powell river, being coal-mining centres, but not a single one, so far as I am informed, in a metal-mining centre, and this notwithstanding that there were employed last year in the metal mines of the province fully 4000 men.

"Surely, though, we may reasonably hope to soon see a decided improvement in this respect—that the metalliferous-miners will take up the First-Aid movement with at least as much

mechanic for the Western Fuel Co., Nanaimo, Vancouver island. Two sizes of this carrying-case were exhibited—a larger one for use in mines and a smaller one suitable for prospectors to take with them when prospecting. The device consists essentially of an aluminium cylinder in which holes are drilled for holding the caps. The box is cored out inside the cap-holding part except for a small stub left in the centre to which disks forming the cover are attached. Different sizes are made, from one to hold 15 caps up to one with a capacity of 60 caps. While generally used in coal-mines about Nanaimo, this safety box has not yet been introduced into metal-mines.

The Pulmotor Again.

The pulmotor again received much attention, numbers of men who had not seen it the first evening having at-

completed. Dr. Drysdale was present at the meeting.

Chairman's Remarks.

The chairman, before closing the meeting, acknowledged the assistance he had received from the branch secretary and other members during his term of office as chairman of the branch; spoke appreciatively of the substantial financial assistance the branch receives from the Provincial Government and the interest of the Hon. the Premier and Minister of Mines, Sir Richard McBride, in the mining industry and the work of the Canadian Mining Institute; expressed gratification that there is now a prospect of the report on the structural survey of Rossland and vicinity being completed without unnecessary delay, and reminded all present that next August important visitors may be expected in Rossland



A Typical Cariboo Hydraulic Mine.

enthusiasm as have the coalminers, and, let us fervently hope, with great benefit to themselves as a result. Just a word in conclusion—a mine superintendent who is an active worker in connection with both mine-rescue and First-Aid work at mines together employing 1300 and 1400 men, told me within the last three months that important as is the work of training men in the use of oxygen-breathing apparatus for mine-rescue work, in his opinion First-Aid training is far more important, for the reason that while it is unlikely the former will be of much use except only once now and again, First-Aid work is necessary nearly every day and so proficiency in it is especially to be encouraged."

A Locked Cap Box.

The branch secretary showed a locked dynamite-cap box, for mine use, patented by Mr. A. S. Hamilton, master

tended after having heard friends speak of its evident utility. Professor McCaffery once more demonstrated the method of using it, and there was a general opinion that it is desirable the machine shall be obtained for use in cases of emergency in Rossland mines.

Report on Rossland Camp.

The secretary read an extract from a letter he had received from Dr. R. W. Brock, Director of the Geological Survey of Canada, as follows: Dr. C. W. Drysdale, of this department, is going to work this season at Rossland to bring the information up to date and to familiarize himself with local conditions, so as to be able to edit the report on Rossland camp, which my duties as Director have prevented my undertaking. I am happy to at last be able to put a good man on this work and trust that the report will now be

when an excursion party is to come to the camp under the auspices of the International Geological Congress, to meet in Toronto next summer.

Vote of Thanks.

The branch secretary moved a comprehensive vote of thanks—to the chairman of the branch (Mr. M. E. Purcell) for his valuable services during his year in office in which he had attended the Semi-Annual Meeting of the Institute in Victoria last September, the American Mining Congress in Spokane last November, and the Annual Meeting of the Institute in Ottawa in March; to their visitors from across the International Boundary line for attending the meeting and co-operating in making it the success it undoubtedly had been; to the Nelson Daily News and the Rossland Miner for the considerable publicity they had given the proceedings in connection with that meeting; to the

various mine and smeltery officials who had been at so much trouble to show the visitors the mines and reduction works; to the vocalists and instrumentalists who had kindly contributed music that evening, and to the citizens of Rossland who had combined to welcome the visitors so heartily. In asking Mr. L. K. Armstrong, secretary of the Spokane Local Section, A. I. M. E., to second this resolution, he observed that it was Mr. Armstrong who first suggested that joint meeting and had interested others in assisting to carry it through.

Mr. Armstrong expressed pleasure at being afforded an opportunity to express the appreciation of his fellow visitors and himself of the most cordial welcome they had received and to second the resolution of thanks to all those who so kindly co-operated in making their short stay in the camp both enjoyable and instructive. In earlier days of Rossland district some had regarded it as a copper camp, but the statistics printed in the "Miner" and the information given them that day relative to the chief valuable content of the big shoot of ore in the War Eagle mine, showed most decidedly that it was a gold camp. He spoke of the astonishment of his fellow visitors and himself at what they had seen in the mines at Rossland and the smeltery and refinery at Trail. In the refinery there was produced fine gold and silver, pure lead, and sulphate of copper; and, too, lead pipe of various sizes was manufactured in that establishment. These things were a striking object lesson to the visitors. The fact that the mines, the smeltery, and the refinery were within comparatively short distance of each other, and that the several processes, beginning with the ore in the mines and ending with the manufactured products of the reduction works and refinery, without long haulage over long distances between the various works, showed the wisdom of having such a comprehensive and advantageous arrangement, which was one that might well be copied elsewhere. He heartily seconded the vote of thanks that had been proposed.

After the resolution had been put and declared carried, adjournment was made to the Rossland Club, where the visitors were entertained at a smoking concert, generously arranged for by a committee of the club. It was late when the party broke up. Next morning the visitors left on their return to their respective places of residence.

MINING IN BRITISH COLUMBIA.

(By E. Jacobs.)

Generally there is activity in the more important districts of the province, the chief exception being that labor troubles at some of the coal mines on Vancouver island have caused a stoppage of work in the Nanaimo district, though not at the Cumberland nor Extension collieries.

Placer-Gold.—Much snow having fallen last winter, the outlook for a plentiful water supply is good. Much will depend on weather conditions, however; if the weather be hot throughout late spring and early summer the snow will melt quickly and the gravel-washing season be shortened proportionately, unless sufficient rain shall fall in the autumn to keep up an ample supply of water for hydraulicking purposes. In Cariboo district preparations are well forward for hydraulicking on the John Hopp properties near Barkerville, namely, the Forest Rose, Stout's gulch, Lowhee creek, and Mosquito creek. Several other placer-gold mines in Cariboo mining division will also be worked this season. In Quesnel division of Cariboo district, the Quesnelle Hydraulic Gold Mining Co. will operate at full capacity, while several smaller properties in the same division will also be worked. In Atlin district, the North Columbia Gold Mining Co. on Pine creek may be expected to again be the largest producer. Other placer operators include the Pittsburg-British Gold Co. on McKee creek, the Placer Gold Mines Co. on Ruby creek, the Otto Creek Development Co. and the Maluin Syndicate on Otto creek, and the Societe Miniere de la Colombie Britannique on Boulder creek. Spruce, Birch, and several other creeks are also being worked, while O'Donnell river will have increased attention on account of good prospects having been found on the benches last season. Notwithstanding that unfavorable accounts have been published regarding Silver creek and neighboring streams south of Teslin lake, so little actual mining has yet been done that it is yet too early to take it for granted the new field is a failure. Now that it is practicable to do mining work there, that part of the district will doubtless be fairly tested before being abandoned by all who have gone in there. Placer-mining in other parts of the province, not mentioned above, is unimportant.

Lode-Gold.—The greater part of the lode-gold produced in the province comes from Rossland and Boundary districts. Of a total of approximately 257,000 oz. recovered in 1912, Rossland mines contributed 132,000 oz., Boundary district (including 35,700 oz. from Hedley camp, Similkameen), 105,000 oz., Nelson division 17,500 oz., and Coast district mines 2500 oz. The current year's output should be larger in all these districts, if no interruption to mining operations shall occur.

Silver.—Slocan district mines, which produced 1,657,000 oz. of the 1912 total of 3,132,000 oz. for the whole province, bid fair to make a larger output this year, for the Standard and Hewitt mines, near Silverton, and the Slocan Star and Rambler-Cariboo, in central Slocan, are all in shape for an increased production, with half a dozen smaller mines also promising proportionate increases. Ainsworth division mines—Bluebell No. 1, Silver Hoard, Utica and Retallack & Co.'s group—are expected to together show a substantial increase over last year's total of 302,000 oz. There is no present indication of East Kootenay

adding much to its 1912 production of 384,000 oz., nearly all from the Sullivan Group mines, which, however, have thus far this year well maintained their average output of lead-silver ore. Boundary district mines have to their credit for 1912 a little more than 389,000 oz. of silver, obtained chiefly from ores also copper-bearing. Other producing districts that added to last year's total were the Coast, with about 104,000 oz.; Rossland, with 87,500 oz., and Lardeau, with 43,500 oz., and all three are now producing silver at a rate that will give at least as large an amount this year.

Lead.—Of nearly 45,000,000 lb. of lead produced in 1912, East Kootenay mines yielded 20,500,000 lb., in the proportion of about nine-tenths from the Sullivan Group and one-tenth from the Monarch, and both these are continuing to produce this year. Of the Ainsworth division production of 4,864,000 lb., the greater part by far was from the Bluebell, which mine is keeping up its output of lead ore. In Slocan, Rambler-Cariboo, Van-Roi, and Standard mines together contributed nearly all of this district's 1912 output of 16,945,000 lb., and this year their combined output promises to be larger, while the Slocan Star, Hewitt and others are expected to swell the total appreciably. The only other present lead-producing district is Nelson, with the H. B. and Emerald mines, both continuing to ship ore. In the Skeena country several silver-lead mines are being opened, but their output is not likely to be considerable this year.

Copper.—The larger copper mines of the province are those of the Granby and British Columbia Copper companies, in Boundary district. Of last year's total output of 51,500,000 lb., they contributed rather more than 33,300,000 lb. Coast mines—in greatest degree the Britannia and in far less the Marble Bay mine—added nearly 15,500,000 lb. to the total, while Rossland mines produced about 2,540,000. A small production from the Red Cliff, in Portland Canal division, made up the remainder. Except that the Britannia may make a larger output this year and the Silver King, in Nelson division, resume production, there are no indications of changes of any importance.

Iron and Zinc.—It is not expected that there will be any production of iron ore in 1913. Beyond development work done on Vancouver Island properties, there has not been any substantial advance made, for there has not been iron ore mined for shipment for several years. There is reported to be a prospect of the Texada Island iron properties being sold shortly.

The chief producers of zinc are Slocan mines—the Lucky Jim, of crude zinc ore, and the Standard and Van-Roi, of silver-zinc concentrate. Zinc occurs in the ores of the Bluebell and Retallack & Co.'s Whitewater group, both in Ainsworth division, but neither shipped any last year. Some good zinc ore has been developed in the Noble Five group, Slocan, and the Monarch, near Field, on the Canadian Pacific main line of railway, is a lead-zinc mine which also shipped last year. The Hewitt, in Slocan Lake district, will likely send out zinc con-

centrate this year, and there is talk of production in Lynn Creek camp, near Vancouver city.

Coal and Coke.—While matters are normal in the Crow's Nest district, which last year produced 1,261,000 long tons of coal (including 397,000 tons made into 264,000 tons of coke, and in the much smaller mines of Nicola Valley and Similkameen (with a total output of 206,000 tons in 1912), there have been labor troubles at Vancouver Island coal mines since last September. Of last year's total output of 3,025,000 long tons from all coal mines in the province, 1,558,000 tons came from Vancouver Island collieries. By the first week in May of the current year the Canadian Collieries (Dunsmuir), Limited, had got the output from its Cumberland mines up to approximately 1400 tons a day, and had resumed production, though on a small scale, at its Extension Colliery mines. At the end of April the United Mine Workers of America, which organization had failed to prevent the resumption of production at Cumberland and Extension, declared a strike at the Nanaimo district mines, notwithstanding that a considerable majority of the miners involved were not members of its organization. The probability is that many of the Nanaimo miners will resume work without the sanction of the U. M. W. of A. Meanwhile, however, production has been interrupted, so it is to be expected this year's total output will be lessened accordingly.

General.—It will be seen, then, that on the whole the mining industry of British Columbia continues to make satisfactory progress. While with lower average prices for some of the metals and the check to production at some of the coal mines, it is hardly reasonable to expect last year's record total value of about \$32,440,000 to be reached this year, there does appear to be warrant for concluding that 1913 will show a substantially higher total value than that of any other year, excepting 1912, in the history of mining in British Columbia.

Assays made by George Clothier from samples of ore from the Clipper and North Star groups up the Salmon River, owned by Charles Larson and William Hamilton, gave remarkable values in the yellow metal. The sample from the Clipper was taken from a 12 inch vein exposure and gave solid gold 96.3 one-eighth oz., or \$1,926; silver, 50.1 oz., \$30.60 and copper, 8 per cent., \$2.40, a total of \$1,959 per ton. From the North Star gold was obtained, 1.90 oz., \$38, and silver, 93 oz., \$55.80, a total of \$93.80.—Portland Canal Miner.

The ore body struck recently by a raise in the Slocan Star mine has a width of nine feet and a content of values that ranges from 46 to 75 per cent. lead and 100 to 250 ounces silver to the ton, according to Dr. Gomm of Sandon. An advance of 180 feet will be necessary to reach the ore body in the deep tunnel driven during the last year. The shoot was entered by the raise at a point several hundred feet above the tunnel level.

PERSONAL AND GENERAL

Movements and News of Prominent Mining Men.

Written for the B.C. Mining Exchange by E. Jacobs

Captain Alexander, of the mining property on Taku arm of Tagish lake, Atlin mining division, formerly known as the Engineer group and later as the Northern Partnership, has returned to the province from a visit to England, where he went to endeavor to arrange for putting a comparatively large stamp-mill on the property, on which some unusually high-grade gold-quartz has been found.

Mr. C. A. Banks, manager for the Jewel-Denaro Mines, Ltd., has returned to Boundary district from his recent visit to England. Some 40 to 50 tons of new plant and machinery has been received at the company's stamp-mill in Long Lake camp, near Greenwood, and this is being put in place in the mill. A lot of lumber has also been hauled from the railway at Eholt, this being material for a building to provide accommodation for the larger number of men it is intended to employ at the mine and mill. Attention was lately called by Mining and Scientific Press, San Francisco to the Waihi-Paeroa Extraction Co.'s big tube-mill plant in New Zealand, described as being the largest in the world. It has been learned that Mr. Banks was responsible for designing that important plant, which has been doing most effectively the work for which it was designed.

From the Gazette it is learned that Mr. T. Walter Beam left Hedley late in May for Denver, Colorado, intending to return in June to spend part of the summer in the camp. Before leaving he saw that arrangements for prospecting the properties near Hedley he and his associates lately bonded were well forward, and diamond-drilling had been commenced. The country over which power and water lines had to be taken is rough, and it was somewhat difficult to do the requisite preliminary work in the rocky canyons, in which much of the drilling is to be done. It is stated that three drills will be kept in continuous operation, and some 25 men will be employed. Mr. Gomer P. Jones, general superintendent for the Hedley Gold Mining Co., will have the oversight of this work as well as continuing his ordinary duties.

Mr. W. F. Best, of Victoria, is spending the field season in Strathcona park, Vancouver island, in which mountainous region it is thought probable valuable metalliferous deposits may be found.

The Pacific Mining Journal, of Seattle, Washington, states that "Mr. Otto Bergstrom, mining engineer, has arranged to represent the Swedish Steel Corporation on this coast and has opened offices in Seattle, and in Vancouver, B. C."

Mr. W. M. Brewer has been examining mining property in the Coast district, to report on it for the owners.

Mr. G. J. A. Buisson, of the Consolidated Mining and Smelting Co.'s engineering staff, has been for a short time in the hospital in that camp.

Dr. D. D. Cairnes, of the Geological Survey of Canada, is expected, according to a report published in a Vancouver newspaper, to visit Silver creek and vicinity, in Atlin mining division to investigate the prospects for the opening there of a payable placer-gold field.

Mr. Chas. F. Caldwell, of Kaslo, manager of the Utica mine, on Paddy mountain, Slocan, is preparing for a resumption of mining operations on that property as soon as it shall be practicable to get in supplies.

The Edmonton Bulletin has printed the following among its news items: Mr. Howard D. Cameron, M.E., C.E., formerly superintendent of the War Eagle mine at Rossland, B. C., is back in Edmonton after an extended trip into the Pembina coal fields country, Alberta.

Mr. W. A. Cameron, superintendent of the Consolidated Mining and Smelting Co.'s Slocan mining properties, will in future make New Denver his headquarters. Beside resuming work on the Richmond-Eureka group near Sandon, the company is developing the Ottawa mine, in Slocan City mining division; also a group of mineral claims on Four-mile creek, near Silverton, Slocan lake.

It has been reported that Mr. Chas. Camsell, of the Geological Survey of Canada, will during the ensuing field season visit Leadville camp, formerly Summit camp, on the Tulameen side of the Hope Mountains divide.

The Slocan Record, New Denver, says that Mr. J. H. Cory is to take charge of development at the Silverite, above Three Forks, and that Mr. T. Avison will go to the Alamo. Both properties are being developed by the syndicate represented by Mr. W. E. Finch, of Spokane, whose district headquarters are at New Denver.

Mr. H. E. Croasdaile who years ago was general manager for the Hall Mines, Ltd., at Nelson, has returned to West Kootenay after having been in England for some time.

Mr. James Cronin has retired from the management of the Standard Silver-Lead Mining Co.'s mine and concentrating mill near Silverton, Slocan lake, and Mr. Geo. H. Aylard is again manager.

Mr. A. W. Davis is superintending operations at the Consolidated Mining and Smelting Co.'s No. 7 mine in Boundary district.

Mr. T. M. Daulton, manager of the Placer Gold Mines Co., operating on Ruby creek, Atlin mining division, is this season employing a larger number of men than formerly.

Mr. Ivan De Lashmutter, formerly superintendent for the Mabry Syndicate, first at Ainsworth and afterward at the Yankee Girl-Ymir group, has succeeded Mr. John Vallance, who had been for about eight years at the Standard silver-lead mine, near Silverton, as foreman and latterly as mine superintendent. Mr. De Lashmutter took charge about the middle of May.

Dr. Chas. W. Drysdale has arrived in Rossland to bring up to date the available information relative to that camp, prior to undertaking the work of editing the report of the structural survey made there several years ago by Mr. R. W. Brock and assistants, which report Mr. Brock has been unable to complete since his appointment as director of the Survey imposed upon him onerous administrative duties that have since fully occupied his time.

Mr. Evan Evans has resumed his duties as district inspector of mines in the Southern East Kootenay Inspection District, with headquarters at Fernie, after having relieved Mr. Jas. McGregor, inspector for West Kootenay and Boundary districts, during the latter's three months' vacation.

Mr. Geo. Watkin Evans, of Seattle, coal mining engineer, who spent last year's field season examining coal lands in the Groundhog basin, upper Skeena district, has gone to Alaska on a preliminary trip to make necessary arrangements for a large expedition which is to leave Seattle on July 5 for Alaska, where, under Mr. Evans' direction, an examining of the Matanuska coal field will be made for the United States Bureau of Mines.

Mr. W. J. Elmendorf, of Victoria, general manager for the Portland Canal Tunnels, Ltd., has gone to Glacier creek, Portland Canal mining division, to spend the fine-weather season there, superintending the work of driving the 2300-ft. cross-cut adit his company has in hand. About one-half the distance has been driven since operations were commenced last autumn.

Mr. John A. Finch, of Spokane, one of the largest shareholders in the Standard Silver-Lead Mining Co., late in May paid another visit to the company's mine and concentrating mill near Silverton. He spent part of the winter in southern California.

Mr. Gwynn G. Gibbons, who for some time was in British Columbia, is now engaged in examining a number of mining properties in Ontario. He now makes Almonte his headquarters.

Mr. A. S. Hamilton, master mechanic for the Western Fuel Co., Nanaimo, Vancouver island, is the inventor of the "Nanaimo" safety dynamite-cap box, for the safe-keeping of caps in readiness for being affixed to a fuse.

Mr. Ronald Harris, who after having been engaged in mining in Boundary district went to South Africa, and later was at London, Ontario, has, so the Pacific Mining Journal states, taken over the management of the Gold Bullion mine, situated near Knik, Alaska. He left Seattle for that property on May 5.

Mr. Robert R. Hedley, who recently returned to Vancouver from examining mining property on Moresby island of the Queen Charlotte group, has been arranging to develop one of the mineral claims, on which he saw a promising showing of copper ore.

Mr. Harry Hook, formerly in the laboratory of the British Columbia Copper Co.'s smelting works at Greenwood, is now at that company's Napoleon mine, at Boyds, Washington.

Mr. Chas. Hussey, of Spokane, Washington, secretary-treasurer of the Standard Silver-Lead Mining Co., has been elected a member of the executive committee of the British Columbia Mining Association, which held its annual meeting in Nelson on May 16.

Mr. E. Jacobs left Victoria for Rossland on May 15 to attend the Fifteenth General Meeting of the Western Branch of the Canadian Mining Institute on May 22-23, and afterward to visit the chief mining camps in West Kootenay and Boundary districts. He expected to be absent from Victoria about two months.

Capt. Harry Johns, of Nelson, superintendent of mines for the British Columbia Copper Co. in West Kootenay district, during the latter part of May accompanied the company's engineer, Mr. Frederic Keffer, on a trip to Highland valley, in Ashcroft mining division, and thence via Nicola valley and Tulameen to Princeton. After a visit to Voigt's and Princess camps, on Copper mountain, they made a rapid automobile trip from Princeton to Greenwood, travelling over the long stretch of intervening country—about 140 miles—in under eleven hours.

Mr. Gomer P. Jones, general superintendent for the Hedley Gold Mining Co., has been on a visit to the Coast, where he spent a week or so about the end of May.

Mr. James Johns, superintendent of the British Columbia Copper Co.'s Mother Lode copper mine, near Greenwood, Boundary district, has resigned to become mine-superintendent for the Dominion Nickel Co., Sudbury, Ontario.

Mr. Andrew G. Larson, of Vancouver, in the latter part of May went to Spokane and thence via Rossland to Slocan district, where, in the capacity of consulting engineer to the owning companies, he made his periodical examination of the Lucky Jim and Slocan Star mines.

Mr. R. H. Ley, of Vancouver, formerly practising at Nelson as a custom assayer, and now with the Giant Powder Co., Inc., was recently knocked down and injured by an automobile in Vancouver.

Mr. R. G. McConnell, of the Geological Survey of Canada, has been assigned the duty of visiting the Britannia copper mine, near Howe sound, to obtain data concerning that important property for the information of the International Geological Congress excursion parties which are to visit British Columbia next August.

Mr. H. J. C. McDonald, resident superintendent at the Granby Consolidated

M. S. and P. Co.'s Hidden Creek mines, near Observatory inlet, has been paying a visit to Phoenix, Boundary district.

Mr. R. G. McFarlane, of Sudbury, Ontario, has been visiting relatives in Nelson.

Mr. Richard Marsh, of Republic, Washington, who years ago was actively associated with mining in Rossland camp, and in later years made Spokane his headquarters, has been appointed superintendent of the Yankee Girl mine, in Ymir camp, following Mr. Ivan De Lashmutter, who has gone to the Standard mine, Silverton.

Mr. H. W. Newton, of Republic, Washington, superintendent for the North Washington Power and Reduction Co., was in Rossland and Trail late in May.

Mr. Fred H. Oliver, who in the busy days of early development of mining properties in Boundary district was manager of the Morrison mine, and since then gave some attention to Erie camp, in Nelson mining division, is now one of several whose names are associated with reported valuable finds of mineral in Eastern Washington.

Mr. John Rinta has left the Rambler-Cariboo mine, in Slocan district, after having been in local charge for several years.

Mr. R. J. Spry is superintendent of the Eureka mine, near Nelson, which property is being developed by the British Columbia Copper Co. under option of purchase.

Mr. F. M. Sylvester, of Spokane, Washington, assistant to the general manager of the Granby Consolidated M. S. and P. Co., is visiting the company's Hidden Creek property, near Granby bay, Observatory inlet.

Mr. J. M. Turnbull, of Trail, of the Consolidated Mining and Smelting Co.'s engineering staff, has been examining mining properties in the vicinity of Hazelton, Skeena district.

Mr. W. J. Sutton, of Victoria, who has been elected chairman of the Western Branch of the Canadian Mining Institute for the ensuing year (until the May, 1914, meeting), is a geologist so well known in British Columbia, especially in the Coast district, that it is a matter for congratulation the branch will have him as its chairman this year, when so many geologists will visit British Columbia after the close of the International Geological Congress next August.

Mr. John Vallance, long actively engaged in the development of the Standard mine, near Silverton, paid a visit to Boundary district after having attended the joint meeting of the mining institutes at Rossland on May 22-23.

Mr. E. E. Ward, superintendent of the Silver Hoard mine, in Ainsworth camp, was a visitor to Rossland and Trail recently.

Mr. J. L. Warner has returned to Rossland and is making preparations for installing a compressor and hoist at the Lily May mine, in the South Belt of that camp.

Mr. Wm. Watson, formerly general manager for the Motherlode Sheep

Creek Mining Co., was at Nelson and Rossland lately. It was stated that he was to again take the management of the Motherlode Co.'s gold-mine and 10-stamp mill, in Sheep Creek camp, Nelson mining division, but he returned East without having done so. Meanwhile, Mr. Geo. E. Farish has remained as manager.

Mr. Bruce White, according to newspaper reports, has gone to the Slave Lake country, to investigate the mineral resources of that region.

Mr. Clyde White, a son of Mr. Oscar White, superintendent of the Slocan Star mine, Sandon, has been appointed superintendent of the Idaho-Alamo group of mines, in Slocan district.

Mr. R. P. Williams, of Vancouver, for years representative in Western Canada of the Canadian Rand and Jenckes Machine Companies, was recalled to New

bia, chiefly in connection with his geological work in the Groundhog Mountain coal basin. Mr. Chipman has been engaged during past seasons in topographical work in the province—last field season in the Windermere district, East Kootenay, and earlier on Vancouver island.

RICH COUNTRY NORTH OF HAZELTON.

The Omineca Miner of the 24th inst. says:

Confirmation of the Miner's reports of the richness of the great district north of Hazelton is furnished by Joseph Ulmer, a practical mining engineer and prospector, who told the Prince Rupert News of his recent exploration of the country lying directly north of the Groundhog district for a radius of a

sion of the Cassiar range from the main Cassiar, the formation consists chiefly of primary metamorphic and intrusive rocks. This is flanked by the great lava beds, extending from the Naas to Tooya lake, and southeasterly and to the east by the Skeena series of coal formations.

"The country, as I said, has never been prospected for quartz, though I believe a few prospectors have gone into it after placer. It is not correctly mapped, even.

"It is a fine country for agriculture, and is also well mineralized. Gold, silver, copper, and probably iron will be found there, and also the rarer minerals. Tungsten I found in quantity, and wherever you find that you find the rarer minerals associated with it. What is needed, and the only thing needed, to open up this vast country, is transportation facilities. That will come, no doubt. The country is now ready for the prospector and the investors who have the means and the time to investigate thor-



Scene in Nechaco Valley, Northern B.C.

York recently to consider business business offers that may result in his removal to that city.

Mr. Wakeley A. Williams, superintendent of the Granby Consolidated Co.'s smelting works, now spends the greater part of his time at Granby bay, where the company is erecting and equipping a 2000-ton copper smelter to smelt ore from its Hidden Creek mines, in that part of the province.

Mr. F. R. Wolfe is manager for the Florence Mining Co., which is operating a small mine in Ainsworth mining division.

The Geological Survey of Canada has selected the following scientists to conduct researches in connection with the Stefansson expedition to the Arctic regions of Canada: Messrs. Geo. S. Malloch, J. J. O'Neil and Y. R. M. Anderson, geologists; Kenneth A. Chipman and J. R. Cox, topographers; and Henri Beauchat and D. Jenners, anthropologists. Mr. Malloch is known in British Colum-

bia, chiefly in connection with his geological work in the Groundhog Mountain coal basin. Mr. Chipman has been engaged during past seasons in topographical work in the province—last field season in the Windermere district, East Kootenay, and earlier on Vancouver island.

"All the way out by way of Groundhog to Hazelton," said Mr. Ulmer, "I found there was great disappointment that the Grand Trunk Pacific is taking no apparent steps to run their proposed branch from Hazelton to Groundhog and from there to Dawson. I know the route to be a feasible one all the way through, one presenting no engineering difficulties. From Telegraph Creek this way it is easy to get into well watered, vast areas of grass, plenty of game, especially moose and caribou, and lots of good fishing.

"The country has not been prospected north of Groundhog and in that vicinity only for coal. North of there the geological formation reminds one of Colorado. In the Cartner range, the south exten-

oughly. I have never gone through a country that looks so promising in every respect. I am leaving on the next Prince Rupert for Granby, and after a stay there shall probably hike back into this interior country."

The recent strike in the Slocan Star at Sandon, in the upraise, has not yet been proved through the ledge, but so far as gone there are six feet of ore, running from 198 to 215 ounces in silver. The ore was encountered in the upraise, 350 feet above the deep-level tunnel and about 60 feet from the surface. The upraise was not yet through the ore body last Wednesday. This is the most important strike made in late years in the Slocan, and proves the continuance of the large body found on the surface.—Slocan Record.

All free miner's certificates expire on the last day of this month. It is important that the holders of such certificates do not overlook the matter of renewal.

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VANCOUVER, B. C., MAY, 1913.

EDITORIAL.

The decision of the Dominion Government to make a further extension of the lead bounty is a very satisfactory piece of news, not merely to the big interior mining camps directly affected, but to the whole of British Columbia. The Dominion Government's action in the matter has been both businesslike and statesmanslike. We are aware, of course, that there is a school of commercial theorists on whom the mere mention of a bounty on anything whatsoever acts with the same effect as that of a red rag on a bull, and there is much to be said from their point of view. The bounty policy may easily become an abuse, be carried to such extremes as to sap the strength and usefulness of the very thing it was intended to assist and strengthen. It can, by injudicious administration, have the same bad effect on an industry as overmuch kindness on the part of parents will have on a child, or as undue and sentimental leniency has on the criminal classes. It is not necessary here to quote examples to show that the whole English-speaking world today is suffering from the sickly and enervating influence resulting from just such an abuse of the principle which underlies

the bounty policy. It is not good that men should get the habit of leaning too much on anything for support—whether it be governments or municipalities or societies or unions. If you help a man too much, you extract his backbone; and impartial observers are already inclined to think that there is an appalling quantity of spineless persons knocking about round Canada these days. But the opponents of the bounty system—like most theorists on government legislation in financial, commercial and social matters—have the fault of trying to put everything and everybody under one cast-iron rule. Their code of action has that direct simplicity which characterized the Grecian King, referred to, we believe, in ancient history. When this person captured one of his enemies the prisoner was fitted to the iron bed upon which the king was wont to sleep. If the unfortunate man proved too long for the bed, his feet were cut off. If he was, on the other hand, too short for the royal couch, the king attached him to machinery which stretched him until he did fit it. Either way, it will be clear to the most thoughtless that the prisoner was spoiled in the process. It was the method of the amateur and experimentalist—and brilliantly illustrative of the line of action followed by many legislative theorists in these latter days. The lead bounty is a case in point. Its extension, at this stage of the mining industry in British Columbia, is purely beneficial. It is conceivable that in the future, when the conditions at present affecting and hampering the lead mining industry in this province shall have changed or have been eliminated, it might become a great evil. But provision is made for such changes by the making of the term of extension a strictly limited one. Therefore, the immediate need of assistance is met, without any need to worry about the future. To the B. C. Mining Exchange the extension of the lead bounty looks like that very rare thing—commonsense legislation. We congratulate the authorities at Ottawa, and we congratulate the lead miners.

The fifteenth general meeting of the Western Branch of the Canadian Mining Institute, held on the 22nd and 23rd inst. at Rossland, full particulars of which are given elsewhere in this issue, was a very successful event. It is pleasant to observe that mining men of all classes are beginning to realize more and more clearly the great benefit which the work of this organization affords to the mining industry. Apart

from the large and valuable measure of publicity secured for the mineral resources of British Columbia by the published press reports of the periodical coming together and comparing of notes of so large a number of men from so many and various mining districts of the Pacific Coast, there is also the noteworthy benefit derived from the carefully written papers, the work of capable and experienced men, which are read at these meetings, and which deal with almost every subject affecting the progress of the mining industry from the point of view of the practical man. The influence of the Western Branch of the Canadian Mining Institute has made a very marked growth during the past few years, and it would be unjust to refer to this growth without due meed of credit being paid to the energetic secretary, Mr. E. Jacobs. It is not too much to say that this growing appreciation of the work and value of the Branch which is being evinced by mining men is directly due to Mr. Jacobs' untiring efforts in the direction of making it of practical value. There is a great deal of very thankless drudgery in efficient secretarial and organization work of this kind—a fact which is only fully recognized by those who have had to perform similar duties—and the mining men of British Columbia owe a debt of gratitude to Mr. Jacobs for the capable and conscientious manner in which he is carrying out his duties towards an institution so useful in the development of British Columbia's banner industry.

Plans for leasing and remodelling the Monitor and Ajax Fraction concentrator at Roseberry, at an outlay of \$10,000 for remodelling, are being considered by the directors of the Lucky Jim Zinc Mines, Limited, according to a statement received by shareholders from T. G. Proctor, the managing director.

Preparations at the Lucky Jim indicate that it is possible that work on the further extension of Level No. 6 may be recommenced soon.

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LATEST METAL MARKETS.

(From Chicago Mining and Engineering World.)

Silver—Bar silver last week advanced a quarter of a cent to 60½ and held at that figure during the early part of last week.

Quotations for silver per fine ounce at New York and per standard ounce at London for the five days ending May 27, were as follows:

	New York Cents	London Pence
May 22	60	27 11-16
May 23	59½	27 0-16
May 24	60½	27 13-16
May 26	60½	27 13-16
May 27	60	27 11-16

MONTHLY AVERAGE PRICES OF SILVER

Month.	New York			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	53½	61½	52.928	55.259
February	52½	58½	51.625	59.043
March	59½	55½	57.959	58.350
April	60½	57½	59.540	59.255
May				50.754
June				51.265
July				50.615
August				51.500
September				53.354
October				53.504
November				62.750
December				53.390
Year				50.837

Copper—The undertone of the copper metal market last week remained very strong and American producers experienced no difficulty in obtaining 15½ cts. and occasionally 16 cts. for electrolytic grade, as well as 15½ cts. for casting for shipments during the balance of the present month and throughout June and July. This, too, despite the fact that buying operations were curtailed materially because of the fact that a majority of foreign and domestic consumers had already covered the bulk of their requirements up to July 1 and in some instances up to August 1.

Estimates on the May report of the Copper Producers' Association, which will be issued on June 8, continue to indicate a reduction of surplus stocks amounting to at least 20,000,000 lbs., as a result of a further material expansion in exports and an additional increase in domestic consumption, together with a slight curtailment of production.

According to Henry R. Merton & Co., every ton of copper delivered is going straight into consumption, and stocks in manufacturers' hands are still at the lowest ebb. This question of the maintenance of the industrial activity is thus of the greatest importance in judging the future course of the copper market; but the answer to the question is at the moment very difficult. In some quarters a falling off in trade is predicted, and it must be admitted that the prolonged unsettlement of European politics has interfered with some branches of business already; but in other directions, especially in the electrical industry, we see nothing but continued expansion, while in the engineering and shipbuilding trades, activity remains assured for a considerable period to come. The bright political outlook in Europe, and the very excellent crop prospects in America, are factors which make for optimism.

Quotations for copper per pound at New York and per long ton at 2240 lbs. at London for the 5 days ending May 27 were as follows:

	Lake	Elec.	Cast	Standard London
May 22.16—	16—15½	15½—		\$68 15 0
May 23.16—	16—15½	15½—		68 12 6
May 24.16—	16—15½	15½—		68 12 6
May 26.16—	16—15½	15½—		68 12 6
May 27.16—	16—15½	15½—		68 11 3

MONTHLY AVERAGE PRICES OF COPPER

Month.	New York—Lake Superior			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	18	15½	17.115	14.525
February	16½	15½	15	14.505
March	16½	15½	15.306	14.911
April	15½	15½	15.731	15.092
May				15.391
June				17.612
July				17.535
August				17.594
September				17.724
October				17.753
November				17.750
December				17.750
Year				15.595

Month.	New York—Electrolytic.			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	17½	16½	15.983	14.425
February	16½	15	15.717	14.435
March	15½	15½	15.055	14.853
April	15½	15½	15.620	15.003
May				16.326
June				17.505
July				17.418
August				17.594
September				17.705
October				17.745
November				17.750
December				17.750
Year				15.634

There was a general decline in the tin market last week as compared with the previous week. London quotations were from £2 to £3 per ton lower, with New York prices down from ¼ ct. to ½ ct. per pound as to delivery. Early in the week the market broke sharply on selling abroad, and it was not until some business developed from this country that a recovery set in. Prices were firm on Thursday, but what gains were made proved to be temporary, as the trend was again downward on the last day of the week. Business at New York was routine at all times, the consumers only taking hold of bargain lots. Sentiment was bearish in view of the fact that the bi-monthly Banca sale falls due this week. At the close dealers were offering spot and nearby tin at a discount of fully ½ ct. per pound from the foreign limits.

Quotations for tin at New York and at London for the 5 days ending May 27 were as follows:

	New York	London
May 22 ..48.87½—48.62½		£222 15 0—217 0 0
May 23 ..48.75—48.50		221 0 0—216 0 0
May 24 ..48.45—48.15		224 0 0—221 0 0
May 26 ..48.45—48.15		220 15 0—216 5 0
May 27 ..48.90—48.50		220 10 0—218 6 0

MONTHLY AVERAGE PRICES OF TIN

Month.	NEW YORK.			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	51.25	49.50	50.414	43.275
February	50.30	47.30	48.738	43.345
March	48.50	45.62½	45.844	42.590
April	50.25	47.37½	49.075	43.970
May				46.055
June				48.046
July				44.555
August				45.849
September				49.232
October				50.073
November				49.859
December				49.899
Year				45.330

Lead—Quotations for lead at New York and London for 5 days ending May 27, were as follows:

	New York Cts. per lb.	London Per Ton
May 22	4.25—	£19 7 5
May 23	4.25—	19 0 0
May 24	4.25—	10 0 0
May 26	4.30—	19 15 0
May 27	4.30—	20 0 0

MONTHLY AVERAGE PRICES OF LEAD

Month.	New York			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	4.37½	4.25	4.301	4.435
February	4.35	4.25	4.30	4.058
March	4.40	4.25	4.340	4.157
April	4.45	4.30	4.381	4.213
May				4.164
June				4.395
July				4.559
August				4.581
September				5.071
October				5.088
November				4.633
December				4.300
Year				4.482

Spelter—The spelter market at New York last week underwent no change, prices remaining the same as for the previous week. London reported a slight decrease in price.

Quotations at New York and at London for the 5 days ending May 27, were as follows:

	New York Cts. per lb.	London Per Ton
May 22	5.40—5.35	£24 7 5
May 23	5.40—5.20	24 7 5
May 24	5.40—5.30	24 7 6
May 26	5.40—5.30	23 0 0
May 27	5.40—5.30	23 0 0

MONTHLY AVERAGE PRICES OF SPELTER

Month.	New York				London.	
	1913	1913	1913	1912	1913	1912
	High.	Low.	Avg.	Avg.	Avg.	Avg.
Jan. 7.40	5.40	7.192	5.505	25.115	26.721	
Feb. 5.80	5.15	5.406	5.541	25.385	26.457	
Mar. 5.45	5.70	5.222	5.817	24.130	25.035	
Apr. 5.95	5.45	5.712	5.799	25.305	25.545	
May					25.520	
June				7.011	26.755	
July				7.229	25.173	
Aug.				7.042	25.434	
Sept.				7.553	27.067	
Oct.				7.550	27.551	
Nov.				7.429	26.755	
Dec.				7.331	25.880	
Year ...				7.053	26.317	

MINING NOTES.

Ground is being cleared for a baby tramway of 2,600 feet, which is to connect the Silver Hoard with the upper terminal of No. 1 tramway. It is expected that the work of construction will occupy 60 days and the cost will be in the neighborhood of \$6,000.

Jensen & Reiley, who are working on the Christmas Box claim, in the Tulameen district, have uncovered what is said to be one of the best ore bodies ever yet found at the surface. Mr. Duenberg has arranged to work the Robertson and Connolly properties next to the Treasure Mountain group.

The Sullivan lead mine, operated by the Consolidated Mining and Smelting company of Canada, is the only metal-liferous mine in East Kootenay district that is now making a comparative large output of ore. Its production, during three months ended March 31st was approximately 10,000 tons, containing about 30 per cent lead. St. Eugene production has been small, only 363 tons having been shipped to the company's smelter at Trail during the last quarter. —Rossland Miner.

Coast and Island Mining

Portland Canal Mines Busy — Salmon-Bear River Deal Closed — Granby Bay Smelter Foundations are Completed—Louise Island Ore Claims Sold—Portland Canal Tunnel Making Most Satisfactory Progress—The Queen Charlotte Island Oil Showings—The Tyee Copper Co. Makes Ore Contract—General News of the Mines

PROGRESS AT PORTLAND CANAL.

Red Reef—The contractors are at work on their 70-foot contract on this property.

Indian Mines—Roy Clothier and F. Boyd are at work driving the main tunnel on this property.

Cascade Falls—Pres. Charles Bunting is in town and reports favorable developments at the mine. A force of three men is at the camp.

Ruth and Francis—J. Nesbitt and Andy Archie, the owners of this group, brought some fine samples of antimonial lead ore from the tunnel. It is stated to run about \$60 per ton.

unless unforeseen delays occur in the delivery of machinery and equipment. The underground work is showing up even better ore bodies than were indicated by the diamond drill exploration, while on the Bonanza group a vein 45 feet wide averaging 2½ per cent. copper has been found.

SALMON-BEAR RIVER DEAL CLOSED.

The Portland Canal Miner of the 24th inst. says:

For some time past a deal has been pending between the Salmon-Bear River Mining Company and the Anglo-American Investment Company, whereby the latter company proposes a purchase of

ton, George Bruggy, H. Thomey, H. Ver-nard and J. Perrault.

P. Daly, to whom much credit is due for the work which has already been done on the property, is enthusiastic regarding the outlook for the coming summer. "With a reasonable amount of capital for development," said Mr. Daly, "there is no reason why the Salmon-Bear River mine should not join the shipping list next winter. The showing which was opened up last summer is far the best yet found on the property, and presents every feature of a large and permanent nature." The other local stockholders seem to be satisfied that their interests will be properly protected by President O. B. Bush.



Party of Land Seekers in the Nechaco Valley, Northern B. C.

Bitter Creek Placer—Simon Fitzgerald and his brother John are prospecting a portion of the famous Bitter Creek placers. They have only just returned to Stewart from O'Donnell river, where they staked some valuable property.

J. F. Maclaren of Vancouver, has been testing the gravels at the junction of Bitter Creek and Bear River on behalf of Vancouver capitalists.

Portland Canal Tunnel—The face of the tunnel is now 1160 feet from the portal, the rock being still very hard. Twenty-four men are employed.

It is expected that the 2000-ton smelter now being erected at Granby Bay will be ready for operation by December,

the assets of the former. Owing to various misunderstandings, the local shareholders in the mining company have withheld their consent to the proposed transfer, but at a meeting called on Monday last by Pat Daily, one of the heaviest stockholders, a full statement by the president, O. B. Bush, regarding the deal, was submitted to their consideration. After some discussion it was unanimously decided to accept the proposal of the Anglo-American Investment Company, and just as soon as certain legal formalities are complied with, the latter company will commence operations at the mine on a large scale. The shareholders who were present at Monday's meeting were P. Daly, W. Hamil-

LOUISE ISLAND ORE CLAIMS SOLD.

The valuable iron ore claims on Louise Island, Cumshewa Inlet, have been sold to Henry K. Owen, of Seattle, says the Queen Charlotte Islander. The purchase price is stated to be \$75,000, and a substantial first payment has been received by the local men who were interested in the property. Mr. Owens will visit the islands this summer with the object of making other investments. The local men connected with the deal are the Bros. Jones, George Young and Walter Dass.

The Utica has closed down until transportation conditions make it possible to get supplies up to the property.

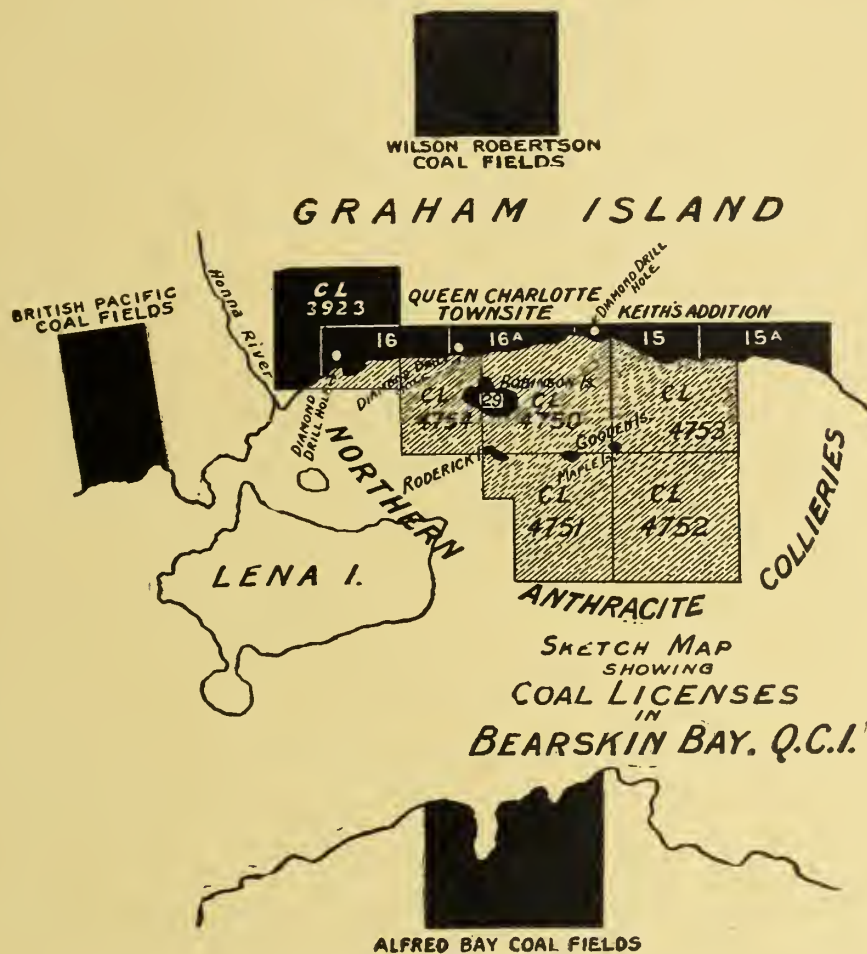
GRAHAM ISLAND OIL SHOWINGS.

The Queen Charlotte Islander of the 12th Inst. says:

In these days of extensive advertising when capital is seeking investment, it appears to those who are acquainted with the possibilities of the discovery of a source of immense wealth, that there should be more progress made in uncovering the miles of territory, extending from Frederick Island to Otard Bay, where there is every indication of beds of paraffin oil. The whole country in that neighborhood shows shale, impregnated with oil, asphaltum, tar and

modity that will bring prosperity, it is to be found in the neighborhood mentioned. One drilling plant cannot do development work as it should be done. The means of communication and the placing of drills requires an expenditure of at least twenty thousand dollars by any person or company desiring to fully test the field. Experts are of the opinion that the oil wells are at least two thousand feet below the surface, and the further the company now at work goes down, the more confident the promoters are that there is oil. It is more than strange that men who are conversant with this kind of work are not giving

from anyone who visited the west coast. In fact, all of the drillers who have worked for the B. C. Oilfields Company, state positively that oil will be found in paying quantities. The shale on the surface is in place. That it is impregnated with oil, is apparent to every investigator. The asphaltum and tar can also be seen on the surface, and in places paraffin wax has been found. In former years government experts made a cursory examination of the territory, and their maps and reports show that they found indications of oil. Considering that so many persons are interested and that it would mean much to the island,



seepages, which all experts pronounce the proper formation for the extraction of a liquid so much now in demand. One company, working under many disadvantages, has been drilling for the past two years. They are expending a great deal of money, without placing on the market any of their stock, and others have organized companies or taken up individual claims, paying to the government the license fees, amounting to at least fifty thousand dollars annually. The majority of the people interested, as well as the original discoverers of the properties, are not rich men, and the introduction of drilling plants means a big outlay of capital. If we have one prospective industry on the island that shows evidence of turning out a com-

attention to the ground on our West coast. The British government, steamship companies, and others who are using large quantities of oil, are aware that the discovery of the fluid in this neighborhood would mean the diversion of a great deal of money that is now going out of the country, to building up our own. It would not cost a great deal to thoroughly test the oil fields of Graham Island, and a few of the dollars that are thrown away on mining propositions might be advantageously spent in proving, once and forever, the value of our ground as a producer of oil. Every expert, who has given an opinion, states most emphatically that the indications for oil are the best in the world. We have not heard one adverse comment

a geologist should visit the locality. The Dominion government has a number of geologists engaged to report on our coal and mineral; would it not be a public benefit for a geologist to visit our west coast and give an expert opinion on the matter? From every standpoint, this would be a means of assisting those who have taken up the ground, and every person interested in the opening up of our islands.

W. Anderson and H. Chisholm are locating a number of claims on the west side of the Blue Ridge, about a mile above South Fork, says the Kaslo Kootenai. The prospectors claim that there is a copper-gold ore there.

TYEE COPPER CO. MAKES ORE CONTRACT.

A Victoria dispatch of the 27th inst. says:

The Tyee Copper Company, Limited, has concluded a contract with the Ptarmigan Mines Company, Vancouver Island, to treat all its ore at the Lady-smith smelter. Customs ore will also be treated. W. J. Watson, who is now in England in consultation with the directors, is returning shortly to arrange for re-starting the smelter.

YUKON GOLD COMES TO VANCOUVER.

An Ottawa dispatch of the 30th ult. says:

Justification for the establishment of a Canadian mint was shown in the figures brought down by Hon. T. White, minister of finance, last night, when he asked for an increase in the maintenance vote of that institution from the Consolidated Revenue Fund of from \$75,000 to \$110,000 annually.

That the assay office at Vancouver had also justified itself and was now getting the Canadian gold that was formerly going to Seattle, was also shown during the discussion that ensued. Dr. Thompson, member for the Yukon, said that the gold output of the Yukon in 1912 was over \$5,000,000, of which nearly \$1,500,000 went to the Ottawa mint through the Vancouver assay office. Before the establishment of the Vancouver office a purchasing assay office at Seattle was getting practically all business of the Yukon in spite of the fact that outside of California, Pacific coast states were producing but very little gold.

PLANS FOR INLAND EMPIRE MINE.

The Rossland Miner of the 28th inst. says:

Frank E. Pierce, superintendent of the Inland Empire mine and mill, in the Sophie Mountain section, was here on Friday and Saturday. During the winter from twenty to twenty-five men have been engaged on development work on the Inland Empire properties, and considerable ore has been developed. The company's ten-stamp mill was restarted for the season on Monday of this week. The intention now is to put in a 500-horse power hydro-electric power plant, by developing water power only a short distance away. This will be used to furnish the power for the mine and also for a 35-stamp mill, with a capacity of 125 tons a day, which it is proposed to erect. The Inland Empire properties carry large and persistent ore bodies.

GRANBY MACHINE SHOPS TO BE ENLARGED.

With the evident intention of manufacturing or putting together a share of the machinery required at the Hidden Creek mine, and incidentally to bring the resources of the local machine shops

well up to date, the Granby Consolidated are about to enlarge the present establishment here in Phoenix, says the Phoenix Pioneer. Large orders for various modern machines have already been placed and the necessary enlargement of the building is expected to be shortly commenced. Among the additional machinery contemplated are the following: A Pratt and Whitney turret lathe, one heavy engine lathe, made by the New-haven company, a Kempsmith's milling machine, a universal grinding machine, one small upright drill press and a cold saw cutting-off machine. By the installation of the above contemplated new equipment it will be seen that the company intend to keep well ahead of developments not only at Anyox or here, but elsewhere as the opportunities for expansion present themselves. That Phoenix is to receive a share of renewed activity is made patent by the recent utterances of the company's general manager, J. P. Graves, but what shape that activity will take is unfortunately left to conjecture.

EXTENSIVE DRILLING OPERATIONS FOR CAMP HEDLEY.

With the visit of Messrs. Merrill and Beam to Hedley last week the public were reminded of the work which is soon to be undertaken to prove up the properties taken under bond by Mr. Beam a few weeks ago, says the Hedley Gazette. The ground to be prospected covers a fine stretch of territory conveniently located for working and lying close in to the town. It is made up of the Bradshaw group, the Duffy group, the Toronto and Galena, the Paris, the Red Mountain and a few others. These for the most part lie on the Twenty-mile creek slope and geological conditions offer the greatest encouragement for successful exploitation and the showing up of fine bodies of payable ore.

One drill is to begin work in a few days to be followed by a second very shortly after, and before the summer is out there will in all probability be three drills at work piercing the formation for a thousand feet and more to show up what is below. The dip of the strata is towards the bed of Twenty-mile Creek, and thus when the ore they are after is discovered it can be worked much more advantageously than that which is every day being mined at the Nickel Plate.

At present hole casing and piping are being brought in and everything got in readiness for an extensive campaign of exploration work. Mr. Beam is expected back in Hedley in a little better than a week and he will be here off and on during the summer.

The exploration work will be under the immediate supervision of G. P. Jones and a little later on a man is coming from the Colorado School of Mines to put in the summer prospecting and geologizing on the ground.

The bonds on most of the properties extend over three years and the bond holders are prepared to give the ground a thorough testing. When they get through more will be known about the hill than ever before. They characterize

the deal as a straight gamble on their part, and of course they could add that the chances are all in their favor, but they prefer to let time decide that.

While it may not be fully decided that the commencement will be made on the Red Mountain ground there is every probability that it will be there. There is a great deal of snow on most of the ground, but men have been shovelling snow for a few days to permit of supplies and equipment being taken on the ground.

LE ROI NO. 2 REPORT FOR APRIL.

Following is the company manager's report for the month of April:

"Josie Mine—Shipped 1,740 tons of ore and 147 tons of concentrates. The receipts from smelter are \$25,100, being payment for 1,653 tons ore shipped and \$2,065, being payment for 151 tons of concentrates shipped. In all, \$27,165.

"Estimated cost for corresponding period—Development, \$8,500; ore production, \$10,500; milling, \$1,400. Total, \$20,400.

"Boundary Raise (Poorman Vein), 300-ft. level—Advance 48 ft., of which 34 ft. averaged 1 dwt. 20 gr. gold and 1 per cent. copper, across an average width of 14 in.

"East Poorman Drift, 400 ft. level—Advance 146 ft., of which 140 ft. averaged 2 dwt. 10 gr. gold and 2½ per cent. copper, across an average width of 11 in.

"No. 52 Raise (Annie Vein), 500-ft. level—Advance 11 ft. which averaged 2 dwt. 10 gr. gold and 1½ per cent. copper, across an average width of 48 in.

"East Poorman Intermediate Drift, 700 ft. level—Advance 54 ft., of which 18 ft. averaged 19 gr. gold and ¾ per cent. copper, across an average width of 2 in.

"No. 37 Drift (Annie Vein), 700 ft. level—Advance 55 ft., of which 50 ft. averaged 9 dwt. gold and 10½ per cent. copper, across an average width of 38 in.

"Poorman Drift, 900 ft. level—Advance 101 ft., of which 75 ft. averaged 3 dwt. 14 gr. gold and ¾ per cent. copper, across an average width of 13 in.

"No. 37 Crosscut and Drift, 900 ft. level—Advance 49 ft. crosscut and 21 ft. driven; latter averaged 19 gr. gold and 1 per cent. copper, across an average width of 34 in."

THE VAN-ROI REPORT FOR APRIL.

Following is the report of the Van-Roi Mining Company's manager for the month of April:

"Mill Report—Total amount crushed, 2,161 tons (average assay 7.2 oz. silver, 1.4 per cent. lead, 4.2 per cent. zinc), yielding 33 tons lead concentrates, assaying 175.1 oz. silver, 54.9 per cent. lead, 11.9 per cent. zinc; and 52 tons zinc concentrates, assaying 54.8 oz. silver, 4.5 per cent. lead and 40.6 per cent. zinc. Mill ran 31½ hours. Total approximate value, \$5,125.

"Estimated expenditure—Development, \$3,388; ore production, \$5,000; milling, \$2,229; total, \$10,617.

"Capital expenditure, \$1,649.

"Intermediate (9—7) Drive Westward—Position 127 ft. above level 9 from raise at 1,477 ft. Advance 43 ft. (add 29 ft. to find distance of breast from raise). Raise to level 7 from this Intermediate Drift, 68 ft. west of centre of original raise, has been started and accomplished an advance of 60 ft. Have reason to believe raise followed branch to the foot-wall main reef. Crosscutting to the hanging-wall from raise searching for continuation Stope No. 1, No. 7 level.

"Westward Drift, level 7—Breast is 1,577 ft. west of portal. Advance 95 ft., Breccia Vein.

"Intermediate (7—5) Drive Westward—Position 43 ft. below level 5, from raise at 1,425 ft, connecting levels 7 and 5. Advance 8 ft.

"Raise from Intermediate (7—5) Drive Westward—Position, 40 ft. west of main raise. This extends to within 5 ft. of level 5, making the advance 34 ft. A little rich ore was struck 5 ft. below level 5. Tramming arrangements preclude further progress of this just now.

"Exploratory Raise from level 7—Position 1,540 ft. west of portal. Advance 41 ft. Breccia Vein."

PLACER MINING ON GRANITE CREEK.

The Similkameen Star says: "R. A. Lambert has again replaced the dam on Granite creek, near the north fork, which was washed away by high water last year. He has made the present dam as secure as possible, having anchored it in the solid rock on either side. Its dimensions are 80 ft. long, 10 ft. deep, 12 ft. 6 in. wide and an apron of 30 feet. Much interest is taken in Mr. Lambert's work, if proven successful, will give an immense impetus to placer mining throughout the district. Gold and platinum are known to be in the creeks and rivers, and it is hoped Mr. Lambert may demonstrate the successful mining of these placers. His flume is 950 feet long, 5 ft. 6 in. by 3 ft. inside, and will carry the creek at low water."

The following excerpt from a paper by Mr. Chas. Camsell, of the Geological survey of Canada, taken from Vol. XIII., 1910, of the "Journal of the Canadian Mining Institute," is of interest in connection with the foregoing news:

"A short distance above the mouth of the north fork, on the main Granite creek, Messrs. R. A. Lambert and Stewart are doing the only serious placer-mining in the whole district. The preliminary development has been carried on by five men for the past three seasons, but the actual sluicing of the gravel may only commence in the coming season. Lambert and Stewart have a lease of one and a half mile of the creek bed above the north fork, a very small part of which has been worked in former times. The gold recovered from those portions was very coarse, though the bedrock was reached in only one spot. In this particular portion, which was but 200 feet in length, the yield is said to have been \$1,200 to the length of a

sluice box, where the gravel in the stream bed had a width of 40 to 50 feet. This yield included nuggets, the gold value of which was from \$100 to \$150; the platinum, however, was fine. The remainder of the creek bed covered by the lease is deep ground and could not be bottomed. Lambert and Stewart are now engaged in cutting down the bed of the stream in the lower part of their lease, in order to reach bed rock and recover the gold and platinum lying on it. Commencing at the lower end of their ground, a dam has been constructed across the stream bed, while 600 ft. of a board flume carries the water over the portion of the channel which it is proposed to first work. The large boulders and rock in the lower part were blasted away, thus enabling the removal by ground sluicing of a depth of about 25 ft. of gravel, which before formed the bed of the stream. The depth of gravel overlying the bedrock is now about 5 ft. and the point has been reached when the gravel can be shovelled into the sluice boxes. This, however, can only be done after the season of high water has been passed. The returns should show a proportion of about four parts of gold to one of platinum, and should amply repay the cost of the preparatory work."

EXCELLENT PROGRESS ON PORTLAND CANAL TUNNEL.

The manager reports that the progress on the tunnel for May was 239 feet, making a total to May 31 of 1,268 feet from the starting point. An adit is being opened from a point about 750 feet in, which will be a great saving in hauling; the length of same will be from 60 to 70 feet and the waste will be taken out through it. The work is progressing most satisfactorily, and with the present progress the same should be completed well within the estimated time.

BRUCE WHITE GOES TO GREAT SLAVE LAKE.

An Edmonton, Alta., dispatch of the 11th inst. says:

Bruce White, of Nelson, B.C., a mine operator of wide experience and original locator of the Slocan Star mine at Sandon, B.C., is in Edmonton outfitting for a trip to Fort Resolution, on the south shore of Great Slave Lake, where he will explore for silver and lead during the summer. Fort Resolution is 800 miles north of Edmonton and well within the Arctic circle.

Reports of enormous deposits of silver-lead in the vicinity of Fort Resolution, a post for the Hudson's Bay company and other fur traders, have drifted into Edmonton at various times during the last few years, but until this time the new field did not attract the attention of experienced operators. Samples of ore brought to Edmonton and assayed at several laboratories, including the testing department at the University of Alberta, show a high percentage of lead, with silver in commercial quantities.

The only obstacle to mining in the district now is the matter of transportation. The Canadian Northern Railway

company has a line to Athabasca Landing, 96 miles from Edmonton, and the Edmonton, Dunvegan & British Columbia railway company is building a line to the North Pacific coast by way of Grouard, at the head of Lesser Slave Lake.

"My associates and myself are prepared to make a thorough exploration of Alberta's hinterland," Mr. White said, "and we shall make a determined effort to ascertain the extent of the mineral resources of the north country."

Mining men who are acquainted with Mr. White's operations say that if the ore exists in quality and quantity as frequently reported a new era will be opened in the development of a district that until the present time has been for a century the stamping ground of fur hunters and Indians, also that a definite statement from him as to the merit of the resources will be accepted in the mining world as an assurance that the field is worthy of extensive development.

Mr. White has ample means to carry on operations, in the event his quest is successful. He is a heavy stockholder in the Slocan Star mine, which has paid large sums in dividends and is still regarded as one of the most valuable silver-lead properties in the Dominion. He was also heavily interested in the Mollie Gibson mine, near Nelson, which property he managed up to the time it was acquired by the Consolidated Mining & Smelting Company.

Speaking of the silver-lead mining situation in Canada, Mr. White said that an entirely new face looms up by the likelihood that the United States government will reduce the duty upon lead and lead products, "and," he added, "we may look forward to very extensive development of the known lead resources in British Columbia as well as organized search for new mining fields throughout the coast provinces and Alberta."

Mr. White expects to leave Athabasca Landing for the north country at the opening of navigation. He will send his supplies in scows, probably travelling with them. He will be accompanied by an Indian pilot and helpers.

PROSPECTING SEASON WILL BE BUSY IN OMINECA DISTRICT.

The Omineca Miner of the 10th inst. says:

The prospecting season in this district is opening somewhat later than usual, but will soon be in full swing. Nearly all the prospectors who have spent the last few seasons in this vicinity will take to the Omineca hills again this summer, while hundreds of newcomers, attracted by the fine showings of ore already uncovered in the district, will take up the search for mineral. In two or three weeks, when there will be feed for horses along the pack trails, there will be an influx of miners and prospectors into the Omineca and Manson Creek, Groundhog coalfields, and other outlying parts of the district where minerals and coal have been discovered. There is every reason to believe that the discoveries of the coming season will be as important as those of any year in the past, since there will be more men in

the field and a much larger stretch of country will be covered.

The next shipment of ore from the Harris mines will be made before the end of the month, and will consist of twenty-five tons. As the ore which is now being taken out of number three vein is of exceptionally high grade, the carload is likely to bring the highest return yet received for Hazelton ore. Development progresses favorably on the property. A winze is being sunk on the 185-foot level, 65 feet north of the main shaft, while the north drift on the same level has been driven 140 feet. Winze and drift show good ore.

The crosscut tunnel on the Erie is now in 115 feet, the contractors making good progress. Twenty-five tons of ore has been sacked for shipment and will be sent to the smelter next week.

On the Surprise, Superintendent North continues work on the upraise on number one vein. This will give air for the continuance of work in the main crosscut tunnel, an excellent piece of work, which has been driven 700 feet. The drift on number one discloses ore of high grade, and further work may show a good deposit. The main objective at present, however, is the crosscut, which is expected to tap the big vein at a depth of nearly 300 feet.

CROWS NEST COAL COMPANY OPERATIONS PROFITABLE.

After a series of unsuccessful years the shareholders of the Crows Nest Pass Coal Company were pleased to have reported to them at the annual meeting that the year 1912 was decidedly profitable, the annual statement showing net profits of \$471,454, which, after deducting the debt balance brought forward from 1911, leaves a credit balance of \$419,423. Net profits were at the rate of 7.58 per cent. on the paid-up capital stock.

ATLIN RAILWAY COMPANY SEEKS INCORPORATION.

An Ottawa dispatch of the 11th inst. says: Notice is given that application will be made to parliament at the next session for an act to incorporate a company under the name of the Atlin Railway company with power to construct a railway, commencing at a point on the southern end of Atlin, at or near the town of Atlin, and following a generally southerly direction to a point on the Taku river, where it intersects the international boundary, and also from a point on the line easterly to the southern end of Teslin Lake.

Application will also be made to parliament at the next session for an act to incorporate a company under the name of the Naas Valley and Northern Railway, with power to construct a railway commencing at or near the mouth of the Naas river and following in a general direction along the valley of the Naas river to the Stikine river and onward northerly, following the shore of Teslin Lake to the junction of the Yukon territory.

FORT GEORGE STATION DISPUTE IS SETTLED.

An Ottawa dispatch of the 11th inst. says:

After a two-days' hearing and an additional two days consumed in digesting the voluminous details the railroad commission yesterday handed down its decision in the now famous Fort George station case. The application of the Grand Trunk Pacific railroad to place a station in the eastern part of the Indian reserve, located at the junction of the Fraser and Nechaco Rivers in Central British Columbia, and to name the station Prince George was refused. The application of the Natural Resources Security Company, Limited, and George J. Hammond, of Vancouver, for a station on the western part of the reserve adjoining the Fort George townsite and for the station to be named Fort George, was successful. The decision orders the Grand Trunk Pacific railway to place the station in the western part of the reserve, 3,000 feet east of the townsite.

The railroad was represented by W. Biggar, K. C., H. H. Hansard, W. D. Hogg, K.C., A. Fripp, R. B. Bennett, K.C.

The Natural Resources company by George J. Hammond, and the citizens of Fort George were represented by R. A. Pringle, K.C., Clive Pringle and George F. Henderson, K.C.

The contest for control of what is now known as Fort George dates back four years. George J. Hammond, of Vancouver, secured from the original stakers the land that is now embraced in the Fort George townsite. Prior to the crown grants being issued the Grand Trunk Pacific railway entered a protest, claiming that this particular land was needed for railway and townsite purposes. The provincial land department at Victoria, however, upheld the original stakers. The land was then subdivided into building lots, streets were graded, sidewalks built, buildings erected and the rapid increase of population indicated the speedy growth of a prosperous city.

The general policy of the Grand Trunk Pacific Development Company, the subsidiary company which exploits the townsites in connection with the Grand Trunk Pacific railway, is to give the owners of property a 50 per cent. interest in the townsites in interchange for a clear deed to their property.

Negotiations were opened between the Natural Resources Security Company, of Vancouver, the owners for the Fort George townsite, and the Grand Trunk Pacific Development company, but were never consummated, owing to the demands made by the railroad. The Indian reserve adjoining the townsite on the east was then purchased by the railroad from the Indians through the Dominion government for \$200,000. The railway company then announced that it would place its station on the eastern part of the reserve, over a mile and a half away from the town of Fort George, and that the name would be changed to Prince George.

The application for the registration of the Indian reserve as Prince George was last week refused by Attorney-General Bowser, of Victoria, and his decision was today upheld by the railway commission.

The victory of the Hammond forces in winning both for the name and station location brings to a close one of the most spectacular townsite fights in the history of western Canada.

The news of the successful outcome will be enthusiastically received by all owners of Fort George property and those interested in the development of the interior of British Columbia.

DOMINION GEOLOGICAL SURVEY SPEAKS WELL OF LILLOOET GOLD CAMP.

The work of the Geological Survey of Canada in the Lillooet district during the last two seasons has proved encouraging for the development of that section from a gold mining point of view. The transportation problem will be solved by the construction of the Pacific Great Eastern railway. The mineral veins are reported to be small, and few in number, but are described by the survey as "continuous and persistent." Mr. Bateman, who last season made a preliminary survey of the Bridge River section, reports: "The gold content is sufficiently high to justify mining and extraction of the ore on a commercial basis." This should justify prospectors and investors in giving attention to that promising section.

SMELTER FOUNDATION COMPLETED.

The foundations for the \$1,500,000 smelter at Granby Bay are ready for the structure, said Superintendent W. Y. Williams, who left for the north on the 21st inst. The steel construction will begin June 1.

HARRIS MINES ORE.

The good ore recently encountered in the Harris mines is still in evidence in the face of the north drift on the 185-foot level on No. 3 vein, says the Omineca Herald of the 24th inst. The last 95 feet of the drift shows high grade ore, which is now 14 inches wide. There is fine ore on the winze also. Water coming into the winze in the last few days makes work slower. The showing at this level is even greater than any in the upper workings, and the Harris boys are naturally much pleased with developments.

LUCKY JIM SHIPS THREE HUNDRED TONS.

Shipments of clean zinc ore from the Lucky Jim mine from May 1 to May 9, totalled 300 tons. The ore was consigned to Dupue, Ill.

LEAD BOUNTY EXTENDED.

The lead bounty has been extended for five years from June 30th, 1913, by the Dominion government. This, it is thought, will place lead mining on such a firm foundation that after the bounty period expires it will be able to maintain itself without governmental aid.

NANAIMO PRESSED BRICK AND TERRA COTTA COMPANY.

Concerning a new industry recently inaugurated, the Nanaimo Herald said: There was much joy in the hearts of the directors of the Nanaimo Pressed Brick and Terra Cotta Company when the first kiln of brick ever burnt at the yards was opened, and the brick proved to be of a quality far beyond the most sanguine expectations of those interested. Several who saw the brick pronounced it one of the finest facing bricks ever turned out in British Columbia, or for that matter in any part of the Pacific Coast.

The brick is perfect in appearance, has a magnificent color, being rich and even, and is exceptionally strong. It has a ring to it like iron, and one can hammer two bricks together with great force without fear of breaking. The bricks are 2½ by 4 by 8, being standard size, large enough to allow for any shrinkage. On every brick of the many thousands turned out from the first kiln is stamped the word "Nanaimo."

The plant of the Nanaimo Pressed Brick and Terra Cotta Company is situated at East Wellington, where the company has some 65 acres of what has been pronounced by experts as some of the finest shale clay to be found anywhere in America. There is sufficient clay there to manufacture 300,000 bricks a day for the next 200 years. The machinery has all been installed and the capacity of the plant at present is 20,000 a day. Seventeen men are given employment now, but with 20,000 bricks turned out daily by the end of a year or two 200 men will be given employment.

To further prove the quality of the brick taken out of this first kiln, it may be stated that they were burnt in an open kiln. Work has already been started on permanent down draught kilns, which will tend to further improve the quality of the brick.

Ald. Harry Shepherd, who has worked so hard on the present idea of turning out good brick in Nanaimo, was one of the happiest men in the city when the result of the first trial was shown. For many years he had maintained that good brick could be made here, even going so far as one local banquet as to state that the day would come in Nanaimo when the clay of the district would mean more to the city than the coal now does. He and Mr. Wm. Kidd have been instrumental, after many drawbacks in the last two years, in forming the present company. The company is capitalized at \$100,000, with about half the stock sold. The balance of the stock is not for sale, and the few local men who have invested in it believe that they are now in a position to carry on the work themselves without disposing of any more of the stock. The officers of the company are: General manager, L. D. Morris; president, H. Shepherd; secretary-treasurer, Alex. Cunningham; directors, Messrs. Wm. Kidd, F. L. Randall (manager of Merchants Bank); J. Dickinson, J. M. McKenzie, L. D. Morris, H. Shepherd and Ed. Fry. Company's solicitor, C. H. Beevor-Potts.

To Mr. Morris, who is a practical brick man with a large experience in Colorado, is due much of the credit for getting the plant in its present state of efficiency. The officers of the company

unite in praising him for the able manner in which he has taken hold since his arrival here.

The Nanaimo Pressed Brick and Terra Cotta Company will have little difficulty in disposing of its output with the present demand for a good brick. Already it has many large orders booked, and the plant will be kept running to capacity to fill them. The company has every facility at the works for shipping, the kiln being right on the edge of the track, brick being loaded into the cars from the kiln. If necessary the brick can be shipped to the mainland without reloading.

THE CORNISH MINER.

The following is from the Engineering and Mining Journal, New York, of May 31:

"The notes about the Cornish miner by P. B. McDonald, published in the Journal of May 3, recalled to mind the following story: In Cornwall at one time there was a mine manager who was also a local preacher, and one Sunday he had chosen for his text the words of St. Paul: 'Who that believeth our report.' The preacher repeated the text two or three times, and at last an old gray haired Cornishman stood up and said, 'It's na use asking 'em, Cap'an, if they know'd that as well as I know tha nobody would believe et.'"

"Mr. McDonald states that sometimes the Cornish mine captain and the mining engineer do not get along well together. This is because each arrives at his conclusions by an entirely different course. The engineer reasons things out, the Cornishman just 'sees 'em.' The following incident will show that this is true in some cases. A few years ago some men in the 'Ol country' had considerable money invested in a placer property in the Cariboo district, in British Columbia, and they sent a mining engineer from Scotland to make a report upon the property. It was an old gravel mine that had seen its best days, and the superintendent, who was a Cornishman, was drifting toward a place where he supposed another channel existed. In those days when supplies were taken in with freight teams, freight rates were high and makeshifts were used where possible, and in this case the superintendent had used 2 by 4 in. lumber topped with strap iron for rails. It was hard work to push a heavy car over those rails, and it often took three or four men to move the car. The mining engineer noticed this, and he was not slow in telling the superintendent that he thought it a waste of time and money to tram all that waste through such a tunnel to the outside.

"The superintendent looked at him for a moment and then said: 'Do you want me to close down the property?' 'No, no,' said the engineer, 'go ahead and find the other channel.' 'Then what in h—l am I to do with the dirt if I don't run it outside?' shouted the Cornishman. 'Do with the dirt, mon; why don't you dig a pit in the bottom of the tunnel and put the dirt in the pit?' This was one of the times that the Cornishman had 'seen 'em,' and the engineer, well—I guess he is still reasoning."

JOSEPH GOLDSWORTHY.
North Vancouver, B.C., May 14, 1913.

SALE OF "EGERIA'S" EQUIPMENT.

A successful sale of the equipment on board the late training ship "Egeria" was held by Mr. Stewart Williams, the Victoria auctioneer, at Heatley's wharf, Vancouver, on Wednesday, June 11. There was quite a lot of competition for the rope and anchor chains—the best rope fetching 6½ cents per lb., and the chains weighing nearly 15 tons fetched 2 cents per lb. The bell, given by the late Queen Victoria, fetched \$25. Many of the old lamps were disposed of, but did not realize big prices, as no sentiment was shown and all buyers bought for a profit.

On the following day the auctioneer tried to dispose of all the sails and boats, but owing to the inclemency of the weather, few buyers turned up and the sale was adjourned.

It is possible that the remainder of the equipment will be sold in Victoria, where this class of goods is more readily disposed of and appreciated.

The binnacles, masts, yards, steam winch and capstan are still to be disposed of, and ought to realize good prices. Any one requiring these goods can get all information about them from either Mr. A. Goldberg, of Railway St., Vancouver, or Mr. Stewart Williams, of Victoria, B. C.

The annual meeting of the British Columbia Mining Association was held at Nelson on May 16. Mr. S. S. Fowler, president, was in the chair. The following is a summary of the report of the proceedings as published in the Nelson Daily News: The president reviewed the work of the past year. Among other things done the executive had concentrated its efforts towards securing extension of the period in which bounty will be paid by the Dominion Government on lead mined in Canada. A resolution was passed by the meeting expressing appreciation of the services of Mr. R. F. Green, member for Kootenay, in securing this extension. It was resolved to communicate this resolution to Mr. Green by telegraph; also to telegraph the thanks of the Association to Hon. W. T. White, Minister of Finance, and the Government for having granted the extension. A resolution was passed favoring the creation of a separate portfolio of Minister of Mines for Canada and urging that Mr. Green be made Minister of Mines. A committee from the Nelson Board of Trade explained the position taken by that organization on the question of the occurrence of platinum in the vicinity of Nelson. Officers and executive committee elected for ensuing year were: President, W. E. Zwicky; 1st vice-president, R. H. Stewart; 2nd vice-president, S. S. Fowler; executive, Ernest Levy, Chas. Hussey, F. Keffer, J. L. Retallack, and A. H. Gracey.

The Utica mine is practically closed down as only eight men are there at the present time. The supplies are playing out, hence the full force cannot be put on again until such time as the narrow gauge can be operated to 12-mile and the road is clear of snow from that point to the mine. This may be a matter of several weeks.

CORRESPONDENCE

HIGH-FALUTIN' CONCERNING VANCOUVER ISLAND MINERALS.

The Editor,

Sir,—A periodical, yclept "Sunset, the Pacific Monthly," published in San Francisco, included in its May number a featured article entitled "The Island of Discovery," or "Vancouver Island, Yesterday and Today," by Mr. Ernest McGaffey, a gentleman who appears to possess a very facile pen and a vivid imagination, but with a happy indifference to facts—if I may judge him by the information (?) he gives concerning mining on, and the mineral resources of, Vancouver island. As this gentleman is employed by an organization actively supported by prominent men who in their business would not think of misleading people by gross exaggeration or fanciful misstatement, it is the more surprising that reckless unreliability in the paid "booster" is not only permitted, but actually applauded.

With Mr. McGaffey's incursions into the world of romance in general I am not concerned, but as one whose constant endeavor it is to disseminate simple facts, not idle fancies, concerning the mining industry of British Columbia, I desire to make emphatic protest against his including this subject in his field of flowery fiction or silly statement. And I do this without hesitation since even such a publication as "United Empire," the journal of the Royal Colonial Institute, London—a publication the editor of which, I am advised, desires above all things that it shall contain only "exact information and facts regarding all parts of the empire"—has been hoodwinked into publishing similar misinformation concerning mining on Vancouver island, contained in an article by the same contributor.

I shall not ask you to give me space to quote in full Mr. McGaffey's highly embellished references to Vancouver island's minerals, but will make brief comment on a few excerpts, as under:

"The iron on Vancouver island is the only known iron in British Columbia. Thousands of tons are in sight: hundreds of tons have been mined and hoisted to the dumps, waiting for transportation. Coal is in close touch with a number of the deposits. This means future steel mills, factories, and ship-building yards on the island."

As to iron being only on Vancouver island—one well known engineer has estimated the quantity available on Texada island at 35,000,000 tons. That property is owned in San Francisco, and ore from it has been made into metal that was used in warship building—I think it was at San Francisco. Again, iron ore was shipped from the Kamloops district during several years for use as a flux in Kootenay smelting works. May I say to any mining man who shall have read Mr. McGaffey's effusion in the "Sunset," that not all the people of Vancouver Island have visions and see steel mills established as a result of their having been "hundreds of tons" of iron ore "mined and hoisted to the dump." Not a few have too keen a sense of the

ridiculous to have any sympathy with such silliness.

As to iron on Texada Island, I quote an excerpt from a paper by E. Lindeman, Ottawa, Ontario, (in Canadian Mining Institute Journal, 1910, p. 107), on "Magnetite Deposits of Texada and Vancouver Islands."

"Texada Island Deposits.—The iron ore deposits occurring on the western slope of Texada Island, from three to four miles north of Gillies Bay, have been known for many years, and were acquired for iron mining as early as 1875. The principal ore deposits are on the Prescott, Paxton and Lake properties. The Prescott mine has been the most largely developed, and has during several years shipped ore to Irondale, Washington. . . . Though it is impossible to make even an approximate estimate of the ore in sight on these properties in Texada Island, because sufficient development has not been done to warrant such an estimate, there is every possibility of large quantities of merchantable magnetite being found. The properties are situated close to the water front, and a little bay offers good facilities for shipping. From none of the claims has the ore to be transported a greater distance than a mile and a half, and in some cases considerably less."

In the course of the discussion of Mr. Lindeman's paper the secretary of the institute, Mr. H. Mortimer-Lamb, observed: "It might be mentioned that the iron ore from Texada Island has been utilized in the United States for some years past to a limited extent, and it is a well known and interesting fact that in two United States warships built in San Francisco, much of the iron employed came from Texada Island."

I shall leave it to Mr. Wm. Blakemore, editor of The Week, to show that Mr. McGaffey knows absolutely nothing of iron ore deposits near Kitchener, in Kootenay district—if he shall be disposed to do so.

Again Mr. McGaffey: "From 1905 to 1910 Vancouver Island produced about one half the copper that came from the entire Pacific Coast district. One group of Vancouver Island mines produced 208,000 lbs. of copper in six months."

So far as I know, Mr. McGaffey is again far astray. But even taking the aggregate of less than 19,000,000 lb. of copper produced in the British Columbia Coast and Cassiar districts in six years, 1905-1910, what is there to boast about in a production of say 1,600,000 lb. a year as compared with say Arizona's mines (the "Sunset" probably having many readers in Arizona) ranging up to the 53,000,000 lb. of the Calumet and Arizona, Bisbee, alone, in 1912, as shown in a recent number of the Mining and Scientific Press? Further, as to one group producing 208,000 lb. in six months—why, if it was only three per cent. ore it would not have kept the copper furnaces on Vancouver Island in blast even one week out of the half year.

Just one more comment: Mr. McGaffey makes it appear that Indians get copper for ornaments from Vancouver Island ores. Well, the only large deposit that has been worked contained more than 35 per cent barium sulphate, not to say anything about its zinc content. In his light and airy fashion, Mr. McGaffey suggests metallurgical skill in Indians not often met with. There is also some fiction

about coal deposits, but I will let that pass, for I think I have already shown Mr. McGaffey's utter unreliability as to minerals on Vancouver Island.

E. JACOBS,

Victoria, B. C., May 31, 1913.

AN INACCURACY.

The B. C. Mining Exchange has been requested by the Secretary of the Western Branch of the Canadian Mining Institute to call attention to an inaccurate statement included in the report published by the Nelson Daily News on May 17, of the meeting of the British Columbia Mining Association, held in Nelson the previous evening. The inaccuracy occurred in the following paragraph: "Mr. Retallack moved the resolution urging the government to create a separate portfolio of Minister of Mines, and to appoint the member for Kootenay, and quoted a resolution passed by the Canadian Mining Institute on similar lines which suggested Mr. Green for the position." It was stated, further, that Mr. Stewart seconded the resolution. When Mr. Stewart's attention was afterward called to the incorrectness of the statement, so far as the Canadian Mining Institute is concerned, he informed the branch secretary that he did not think Mr. Retallack had made the quotation attributed to him in the newspaper report under notice. The branch secretary sends the following excerpt from a report of the annual meeting of the Institute, before which the matter was brought for consideration, taken from the Engineering and Mining Journal, New York, the editor of which attended the meeting, and stated in the Journal that: "A resolution which provoked lively discussion was offered by

"The British Columbia Old Country Public School Boys' Association"

All Old Boys of British Public Schools now in Vancouver Island, B. C., are requested to communicate the following information to the Secretary of the Association. (1) Name. (2) Present address. (3) Old School and date of residence there. (4) Present occupation.

A copy of the constitution and by-laws of the Association will be sent to every old public school boy who is not already a member thereof.

It is hoped that all may join, so that a complete register of old public school boys now in Vancouver Island may be obtained.

Old members who have not done so are requested to notify the Secretary of any change of address.

Address to the Secretary,

A. R. SHERWOOD

BOX 812.

VICTORIA, B.C.

Col. J. J. Penhale, of Sherbrooke, Quebec, calling for an independent Department of Mines under its own minister in the Dominion Government. This drew out much adverse expression of opinion. It was pointed out that the Canadian mining industry had at present substantially all the resolution asked for, and that it was mainly at the instance of the Institute that the Hon. Louis Coderre had been appointed Minister of Mines, his other duties as Secretary of State not being so numerous as to prevent his paying proper attention to the mining industry. Dr. W. G. Miller (provincial geologist for Ontario) moved that all the words in the resolution after the word 'Resolved' be struck out, and his motion was emphatically carried."

It may be added that the Canadian Mining Journal, Toronto, has since printed the following editorial: "The British Columbia Mining Association has placed itself on record as appreciating highly the work of Mr. R. F. Green, M. P. for Kootenay, B. C. To his hard work, and to the clear sightedness of the Hon. W. T. White, is attributed the continuance of the lead bounty. At the same meeting the Ottawa Government was again strongly requested to create a separate Portfolio of Mines at Ottawa. To this request was joined the suggestion that Mr. Green be appointed Minister of Mines. While the suggestion of creating a separate Portfolio of Mines is one in which we thoroughly concur, and one we have been urging for some years, it is our opinion that the British Columbia Mining Association has not acted wisely in obfuscating the issue by submitting the name of Mr. Green. Mr. Green's merits or demerits have nothing to do with the case. The chief point is to convince the Government that a Portfolio of Mines is a necessity. After that the matter of selecting the Minister will take care of itself."

APPRECIATE EXTENSION OF LEAD BOUNTY.

Fred A. Starkey, president of the Associated Boards of Trade of Eastern British Columbia, has sent the following letter to R. F. Green, M.P. for Kootenay, expressing the appreciation of that body for the extension of lead bounty, etc.:

Nelson, B.C., May 19th, 1913.

R. F. Green, Esq., M.P., Ottawa.

Dear Mr. Green,—On behalf of the Associated Boards of Trade of Eastern British Columbia, I desire to express our strong appreciation to the Right Honorable R. L. Borden, Premier of Canada, and his government, for their generous granting of the lead bounty. I am personally more than pleased to write you on this matter, on behalf of the Associated Boards, as we have taken, possibly, the most prominent part in connection with this and other matters pertaining to the mining industry, commencing some two years ago.

It is very gratifying to the board to know that they have been associated in being instrumental in bringing about this result.

I also note in the papers that arrangements have been made in connection with the department of mines for the sampling and testing of the different compact ores, and also the offer to the mining industry that they will receive such ores

with a view of demonstration, treatment, etc. This will be a great boon to the small mine owners.

By appointing a Minister of Mines, who would have charge of this ever-growing and important industry, it would certainly be of great benefit. While the geological department has done and is doing a great deal for the country with the carrying out of the policy which would assist if accompanied by more practical work done such as now being started by the department in the matter of testing, determining the different processes that should be used. If this matter is further extended by practical examinations, so that official reports could be given to the world in regard to the possibilities of the different class of mining, it would be the means of inducing capital to invest, the lack of which is the only drawback at the present time in the development of the finest mineral bodies in the world, which are accompanied by every facility, such as transportation, water, power, timber, etc.

While wishing you to convey to the Right Honorable R. L. Borden and his cabinet our pleasure for their gratifying generosity in regards to the extension of the bounty, I cannot refrain from expression on behalf of the Associated Boards of Trade the sincere appreciation to yourself for the great interest you have taken in bringing this matter to the attention of the government, the consummation of which we feel is greatly due to your untiring interest in this matter. Yours sincerely FRED A. STARKEY, President.

To Surveyors and Prospectors

Messrs. TEMPLE & TRACY having purchased the Ranching and Store business near **Hanceville, B.C.** formerly owned by Mr. Norman Lee, wish to announce that they are prepared to

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CANCELLATION OF RESERVE.

Notice is hereby given that the reserve existing upon Crown lands situated in Range 4, Coast District, and more particularly described from the southwest corner of Township 10, bearing date of the 25th day of May, 1910, and published in the British Columbia Gazette on the 26th day of May, 1910, is cancelled in so far as same affects the acquisition of said lands under the provisions of the "Coal and Petroleum Act."

R. A. RENWICK,
Deputy Minister of Lands.

Department of Lands,

Victoria, B.C., May 5th, 1913.



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under Timber License No. 31020, now expired, situated at Pender Harbor, notice of which appeared in the British Columbia Gazette on the 27th of December, 1907, is cancelled, and that said lands will be open to entry by pre-emption at 9 a.m. on Monday, the 25th day of August, 1913.

R. A. RENWICK,
Deputy Minister of Lands.

Lands Department,

Victoria, B.C., 17th May, 1913.



DEPARTMENT OF LANDS.

CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under Timber License No. 33093, now expired on Cortes Island, Sayward District, notice of which appeared in the British Columbia Gazette on the 27th of December, is cancelled, and that said lands will be open to entry by pre-emption at 9 a.m. on Monday, the 25th of August, 1913.

R. A. RENWICK,
Deputy Minister of Lands.

Lands Department,

Victoria, B.C., 17th May, 1913.



NOTICE OF CANCELLATION.

Notice is hereby given that the reserve existing on the east half of Lot 454, Sayward District, formerly covered by Timber License No. 38427 expired, is cancelled, and the lands will be open to pre-emption at the hour of 9 a.m. on Thursday, the 29th day of May, 1913.

R. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B.C.
February 10, 1913.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing by reason of the notice published in the British Columbia Gazette of the 27th December, 1907, is cancelled in so far as the same relates to the following described lands, so as to permit of the sale of the timber standing thereon:—

Those certain parcels or tracts of land situated in New Westminster District, and which may be more fully described as follows:—

(1.) Commencing at the southerly southeast corner of Lot 918, New Westminster district; thence south 15 chains along the east boundary of Lot 2563A; thence East 20 chains, more or less to the east boundary of Lot 569; thence northerly along the east boundary of the said Lot 569 a distance of 15 chains, more or less, to the southwest corner of said Lot 918; thence easterly along the south boundary of said lot to the point of commencement; containing by admeasurement 30 acres, more or less:

(2.) Commencing at the most easterly southeast corner of Lot 569, New Westminster District; thence south 10 chains, thence west 40 chains, more or less, to the fractional east boundary of Lot 569; thence north along said boundary a distance of 10 chains, more or less, to an angle of said lot; thence easterly along the fractional south boundary of said lot to the point of commencement; containing by admeasurement 40 acres, more or less.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B. C.

The estimated expenditure of the Provincial Government for 1913 is \$17,000,000, or \$40 per capita of the entire population.



CANCELLATION OF RESERVE

NOTICE is hereby given that the reserve of vacant Crown lands in New Westminster District, notice of which appeared in the B. C. Gazette on the 19th of October, 1911, is cancelled in so far as it relates to that portion of said lands covered by the applications to lease of Hermon Wilber Vance and John Pederson.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B.C.
2nd April, 1913.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing over Crown lands in New Westminster District, formerly covered by Special Timber Licence 16968, by reason of the notice published in the British Columbia Gazette of the 27th December, 1907, and bearing date of the 24th day of December, 1907, is cancelled in so far as the same relates to the following described parcel of land: 'Commencing at a post planted at the northeast corner of Lot 769, New Westminster District; thence west 17 chains; thence north 40 chains; thence east 40 chains; thence south 13 chains, more or less, to the shore of St. Vincent Bay; thence following the shore-line of St. Vincent Bay to the point of commencement'; and that the said lands will be opened for entry by pre-emption on Wednesday, the 23rd day of July, at 9 o'clock a.m.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B. C., April 14th, 1913.

July 12



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing upon Crown lands in the Cariboo and Cassiar Districts by reason of a notice, bearing date September 12th, 1907, and published in the British Columbia Gazette on September 12th, 1907, as well as the reserve existing upon Crown lands within the Land Recording Districts of Cariboo and Lillooet and the Kamloops Division of Yale Land Record-

ing District by reason of a notice, bearing date April 3rd, 1911, and published in the British Columbia Gazette, on April 6th, 1911, is cancelled in so far as the same affect the acquisition of said lands under the provisions of the "Coal and Petroleum Act."

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B. C., April 14th, 1913.
ap 19

July 12



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing over the lands surveyed as Lot 1603, Group 1, New Westminster District, by reason of a notice published in the British Columbia Gazette of the 27th of December, 1907, and bearing date the 24th day of December, 1907, is cancelled in so far as it relates to the pre-emption of said lands, and that the said lands will be thrown open for pre-emption under the provisions of section 2 of the "Land Act Amendment Act, 1913," on Tuesday, July 22nd, 1913, at 9 o'clock a.m., and that no pre-emption record shall include more than 40 acres; the said lot being divided for pre-emption purposes into quarters of 40 acres each.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B.C., April 14th, 1913.
ap 19

July 12



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve existing over the following parcels of land, situated in Clayoquot District, by reason of the notice published in the British Columbia Gazette of May 23, 1912, and dated May 18, 1912, is cancelled insofar as it relates to pre-emption; and that the said lands will be thrown open to pre-emption, under the provisions of Section 2 of the "Land Act Amendment Act, 1913," on the 30th day of June, 1913, at 9 o'clock a.m.; and that no record shall consist of more than one legal subdivision of the said lots, and the maximum area shall not exceed 41.5 acres. Lots 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320 and 1321.

R. A. RENWICK,
Deputy Minister of Lands
Lands Department, Victoria, B.C.
March 12, 1913.

At the present rate in another decade the production of British Columbia mines will reach \$100,000,000.

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The Canadian Copper Company
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The Duke of Portland is reported to have purchased 37,000 acres of land in the Nicola Valley.

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CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering Lot 49, Range 1, Coast District, notice of which appeared in the British Columbia Gazette on the 27th of December, 1907, is cancelled, and that said lands will be opened to entry by pre-emption at 9 a.m. on the 11th day of August, 1913.

R. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B.C., May 5th, 1913.



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering a parcel of land situated in the vicinity of Howe Sound, formerly covered by Timber License No. 17452, now expired, and more particularly described as: Commencing at a post planted on the southeast corner of Lot 835, New Westminster District; thence north 40 chains; thence west 40 chains, more or less, to the east boundary of Lot 3200, New Westminster District; thence south 72 chains, more or less to the shore of Howe Sound; thence following the shore line in a northeasterly direction to the point of commencement, notice of which appeared in the British Columbia Gazette on the 27th of December, 1907, is cancelled and the land will be open for entry by pre-emption on the 1st day of August, 1913.

R. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B.C., May 5th, 1913.

The Le Roi mine at Rossland has produced 1,500,000 tons of ore valued at \$24,000,000.

INDEX

Subject	Page
Fifteenth Meeting of the Western Branch Canadian Mining Institute Takes Place at Rossland	5
Mining in British Columbia.....	16
Personal and General	17
Rich Country North of Hazelton ...	19
Editorial	20
Latest Metal Markets	21
Coast and Island Mining—	
Progress at Portland Canal	22
Salmon-Bear River Deal Closed..	22
Louise Island Ore Claims Sold...	22
Graham Island Oil Showings....	23
Tye Copper Co's Contract	24
Yukon Gold Comes to Vancouver.	24
Extensive Drilling Operations at Hedley Camp	24
Le Roi No. 2 Report for April ...	24
The Van Roi Report for April...	24
Placer Mining at Granite Creek.	25
Progress on Portland Canal Tunnels	25
Busy Season in Omineca District	25
Lead Bounty Extended	26
Nanaimo Pressed Brick Co.	27
The Cornish Miner	27
Sale of "Egeria" Equipment	27
Correspondence—	
High-Falutin' Concerning Vancouver Minerals	28
An Inaccuracy	28
Appreciate Extension of Lead Bounty	29
Back to Wood Paving	30
Good Words of Kaslo	34

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CANCELLATION OF RESERVE.

Notice is hereby given that the reserve existing on lands formerly covered by expired Timber License No. 38428 and known as Lot 439, Sayward District, is cancelled, and said Lot will be open to pre-emption at the hour of 9 a.m. on Wednesday, the 7th day of May, 1913.

R. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B.C.
3rd March, 1913

MINING STOCK QUOTATIONS.

Supplied by Waghorn, Gwynne & Co., Stock-
Brokers, Vancouver, B.C.

LISTED STOCKS.

Spokane.	Bid.	Asked.
Ajax .. .. .	.08½	.17
Alameda .. .. .	.00½	.01
Alhambra .. .. .	.04½	.10
Ambergrie .. .. .	.05	.07½
Am. Comd'r .. .. .	.00½	.01½
B. C. Copper	4.25	4.50
Black Horse .. .. .	.01½	.02½
Bullion .. .. .	.01	.02
Bullwhack .. .. .	.48	.52
Caledonia .. .. .	.28	.26
Canadian Cons.	45.00	75.00
Carbonate Hill .. .. .	.01½	.04
Copper King .. .. .	.02½	.02½
Copper King (Che.) .. .. .	.28	.28
Federal, pref.	43.00	51.00
Federal, com.	16.00	23.00
Gertie .. .. .	.05	.06½
Granby Smelter	68.00	70.00
Happy Day .. .. .	.01	...
Hecla	2.20	...
H. E. M. .. .. .	.07½	.09½
Hypotheek .. .. .	.02½	.02½
Idaho Giant .. .. .	.01½	...
Idora Hill .. .. .	.02	.02½
International C. & C. .. .. .	.37	.41
Jack Walte .. .. .	.07½	.09
Laclede .. .. .	.01	.03
Lucky Calumet .. .. .	.01½	.02½
Lucky Jim .. .. .	.13½	.17
Marsh .. .. .	.22½	.26½
McGillivray C. & C. .. .. .	.15	.18½
Missoula Copper .. .. .	.02	.02½
Monitor .. .. .	.01½	.02½
Moonlight .. .. .	.04½	.01½
Nabob .. .. .	.01	.01½
Nugget Gold Mines .. .. .	.25	.38
Oom Paul .. .. .	.01	.03
Puritan .. .. .	.13	.19
Rambler-Cariboo .. .. .	.85½	.90
Rambler Cariboo Ext. .. .. .	.04	.05½
Silver Cable .. .. .	.02½	.05½
Snowshoe .. .. .	.01½	.02½
Snowstorm .. .. .	.39	.45
Standard S. L.	1.35	1.47
Stanley .. .. .	.03½	.04
Stewart	1.92	1.97
Tamarack Con.	1.25	...
United Copper .. .. .	.60	1.00
Utica .. .. .	.16	.19½

Industrials

	Bid.	Asked.
Wash. Water Power Co.	133.00	136.50
Western Union Life	135.00	145.00
Interstate Con. Tel.	20.00	...
Tamarack and Custer	1.01	1.26

Cobalt Stocks

	Asked.	Bid.
Bailey .. .. .	.09½	.09½
Beaver Consolidated .. .. .	.40½	.39½
Buffalo	2.50	2.10
Chambers-Perland .. .. .	.29	.28½
Great Northern .. .. .	.09	.09½
City of Cobalt .. .. .	.39	.38½
Conlagas	9.25	9.10
Crown Reserve	3.65	2.58
Foster .. .. .	.11	.09½
Gnfford .. .. .	.06½	.06
Gould .. .. .	.03½	.03½
Green Meehan .. .. .	.01½	.01½
Hargrave .. .. .	.08½	.08
Mc Kin. Dar. Savage	1.98	1.97
Nipissing	9.15	9.00
Ophir .. .. .	...	.04
Otis .. .. .	.02	.01½
Peterson Lake .. .. .	.25½	.25½
Rochester .. .. .	.04½	.04
Right of Way .. .. .	.08½	.08
Silver Leaf .. .. .	.04½	.04
Temiskaming .. .. .	.34	.33½
Trethewey .. .. .	.84	.82½
Wettlaufer .. .. .	.15	.15

Porcupine

	Asked.	Bid.
Crown Charter .. .. .	.00½	.00½
Dome Extension .. .. .	.06½	.06
Foley O'Brien .. .. .	...	.16
Hollinger	15.50	15.15
Jupiter .. .. .	.37	.36
North Dome .. .. .	.60	...
Pearl Lake .. .. .	.30	.29½
Porc. Imperial .. .. .	.02½	.02
Preston East D.04	.03½
Rea Mines15
Swastika10	.09½
Vipond20	.19½

Sundry

C. G. F. S.05	.04½
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VANCOUVER STOCK EXCHANGE.

Closing quotations, June 26:
Listed Stocks.

	Bid.	Asked.
Dominion Trust Co., X.D.	106.00	115.00
Great West Per. A., X.D.	129.50	132.00
International C. & C. .. .. .	.35½	.37
Vancouver Development	11.00	...
Alberta-Canadian Oil .. .. .	...	.02
Alberta Coal & Coke .. .. .	...	.01½
Nugget Gold Mines .. .. .	.25	.30
Portland Canal .. .. .	.02½	.02½
Stewart Min. & Dev. Co. .. .. .	.15	...

Unlisted Stocks.

	Bid.	Asked.
B. C. Copper	2.35	...
B. C. Trust Co.	101.00	...
Granby	52.00	...
Northern Crown Bank .. .. .	...	91.00
National Finance .. .. .	...	119.00
Pacific Coast Fire .. .. .	...	124.00
Pacific Loan Co.	25.00	...
Prudential Invest. Co. .. .. .	...	106.00
Canada Cons'd. M. & S.	72.00	...
American-Canadian Oil .. .. .	...	.05
Amal. Dev. .. .. .	.00½	.00½
B. C. Refining Co. .. .. .	.47	...
Can. Cali Switch .. .. .	...	.40
Can. Pac. Oil of B. C. .. .. .	.02½	.04½
Can. N. W. Oil .. .. .	...	.02½
Coronation Gold .. .. .	.90	...
Glacier Creek .. .. .	.04½	.05
Grand Trunk Lands .. .. .	.06	...
Hudson Bay Fire	100.00	...
Kootenay Gold .. .. .	.15	.16
Lucky Jim Zinc .. .. .	.07	.07½
McGillivray Coal .. .. .	.14½	.16½
Nicola Valley C. & C. .. .. .	...	16.00
Rambler Cariboo .. .. .	.32	.40
Royal Collieries02
Snowstorm28	.38
Standard Lead	1.15	1.40
Stewart Land	6.00	...
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CANCELLATION OF RESERVE.

Notice is hereby given that the reserve
existing on lands situated in the vicinity
of Slocan River and formerly embraced
in Special Timber License No. 31424 ex-
pired is cancelled and the lands will be
thrown open to pre-emption at the hour
of 9 a.m. on Monday, the 9th day of
June, 1913.

R. A. RENWICK,
Deputy Minister of Lands.

March 3, 1913.

A. VAN DER NAILLEN, JR.

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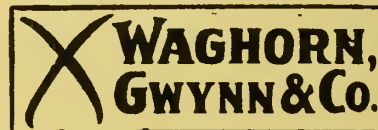
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BACK TO WOOD PAVING.

The prospects of a great wood pavement industry in this province are becoming constantly brighter. With the enormous wealth of fir timber of classes Nos. 1 and 2 Common, which is regarded everywhere as almost the best, if not the best in the world for the purpose of paving, British Columbia offers a wonderful future to this most important industry in the development of great towns and cities.

The growing communities of the Prairie and Coast provinces are laying every year hundreds of miles of streets, which might be paved with creosoted wood blocks if only its virtues were widely known. The city of Calgary has laid two streets, and they have proved remarkably successful. There have been numerous tests made of paving materials in the great cities of the world, in Paris, London, Boston, Chicago, New York and St. Louis, and all of these great cities find wood block paving best, being of reasonable cost, durable under any traffic, easy to maintain and to clean, practically dustless, firm under the feet of horses, and of low traction resistance. The Rue de Rivoli, Paris, has a pavement of wood blocks which have stood for years the city's heaviest traffic.

In Baltimore in 1901 a test strip of miscellaneous pavement was laid on Holiday street. This strip contained 11 test sections of paving materials, which were in every case furnished by the manufacturer—one of creosoted wood blocks, one of vitrified brick. The superior durability of the wood blocks was clearly in evidence after four years, and in 1907 every area save that paved with wood was in such bad condition that the test was officially declared closed. The wood blocks in question, however, together with such others as were needed, were immediately relaid in paving the entire original test area.

In Chicago also in 1900, a creosoted wood block pavement was laid on Michi-

gan avenue, immediately in front of the Auditorium hotel, and adjoining it at the same time a strip of asphalt block. In 1905 these asphalt blocks were replaced by wood. During this five-year period the asphalt had worn down an average of an inch, and so unevenly that ruts formed and the blocks had badly rounded. In the same period the wood blocks lost but an eighth inch in depth, and the surface, save for one badly built gutter at a single point, was of even grade and smooth.

The initial cost of creosoted wood block pavement is on an average somewhat less than that of granite, not widely variant from that of brick, and somewhat greater than that of asphalt, inferior patent pavements and macadam. Its life in anything like satisfactory condition, however, is confessedly longer than theirs. It is but a truism, therefore, to say that the proper basis of judgment, at least of wood block pavement, is the returns upon its total live cost viewed as an investment. This principle, well recognized abroad, though but recently attracting attention here, intimately involves, of course, the question of a pavement's durability.

That the maintenance of cost of creosoted wood block pavement is low follows as a necessary corollary to its durability. As a matter of fact, no pavement shows so low an upkeep cost. This is due in great part to the tenacity with which treated wood blocks preserve their evenness of surface and of wear, and in a lesser degree to the ease with which wood pavement is repaired, and, in the case of underground improvements, removed without waste and relaid, in the exact place and quantity necessary.

Certain wood block pavements which have been laid in some cities in Western Canada cannot be regarded as fair experiments, because of the failure to treat the blocks with preservative before use, and because of faulty laying. Wood blocks must be treated with preservative and evenly laid on firm foundation.

The Forest Branch is securing all possible data on this subject with a view to encouraging in every way the development of an enterprise which will prove of tremendous importance to the new towns and cities of the growing west, and which by furnishing another market for wood will greatly assist the lumber industry of British Columbia.

The Reporter states that the rock with which the Great Northern bridge crossing the Elk at Michel is ballasted assays \$4 to the ton in gold.

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GOOD WORDS, FOR KASLO.

Commenting on Kaslo's splendid financial standing and the solid future ahead of the city, the Toronto Saturday Night, a publication that has unhesitatingly condemned all forms of wild cat investment in mining, real estate, land and securities, says on its financial page:

"Small investors who are allowing their money to go into what they believe to be fashionable channels, that is, into land syndicates and land companies of one kind or another, should remember that safety is never combined with high profits. A half dozen instances out of a hundred where an utter greenhorn has bought mine shares at ten cents, which have become worth two dollars, or has participated in a real estate deal making him two or three hundred per cent. profit, does not vary the rule. The town of Kaslo, B.C., is at the present time trying to market a small issue of six per cent. 20-year debentures, which are being offered at a price to make the yield somewhat over six per cent. As the security behind these debentures is undoubtedly good, there is a chance for either one or a larger number of individuals to pick up these bonds at a discount. Kaslo owns its waterworks system, said to be valued at \$50,000, and has little or no debt. The C.P.R. realizes the importance of this fruit centre and is spending a large sum connecting it up with Nakusp. Securities such as the above are, should not go begging. Proprietors of money who ask for a greater yield with much less security as part of the bargain, may have to revise their views one of these days."

A NEW MAP OF THE PROVINCE.

A new wall map of the Province of British Columbia is now ready for distribution. The map is on a scale of 17.75 miles to one inch, and is in four sheets, which, when joined together, make a map about 5 feet square. In order to cover the cost of the production of this map, a charge of \$1.00 is being made, and no complimentary copies are being sent out. It can be secured by sending to the Land Department, Provincial building, Victoria.

MEMBER FOR KOOTENAY RETURNS FROM OTTAWA.

The Nelson News of the 28th inst says:

Delighted to return to British Columbia after several months at Ottawa, and more than ever convinced of the great future toward which this province is progressing with such rapid strides, R. F. Green, member for Kootenay in the Dominion House of Commons, passed through Nelson last night on his way to the coast. He will return to Nelson next month.

On the arrival of the Crow boat Mr. Green was met by friends, who were eager to congratulate him upon the extension of the lead bounty, the opening of the Dominion railway belt and the large appropriations which he has been

successful in securing for the carrying out of improvements to meet the needs of the people of this riding.

Mr. Green appeared to be particularly gratified at the extension of the lead bounty, which assures for the lead miner a minimum price of \$18 per ton for the next five years and places the industry on a solid foundation. The extension of the bounty, which was vigorously opposed by Hon. Frank Oliver and other Liberal speakers in the house, will be followed, it is hoped, by Mr. Green, by the appointment of a commission to investigate the needs of the silver-lead mining industry, a proposal which the member for Kootenay placed before parliament in his speech in support of the bounty extension. The sum appropriated for the bounty is \$600,000.

In addition to appropriations totalling \$327,100 for public works in Kootenay, which were enumerated in the main estimates, Mr. Green has secured \$131,500 in the supplementary estimates. Of this latter sum \$100,000 is for a new dredging plant for use in this riding. The total secured specifically for Kootenay public works is \$458,600, apart from general grants, such as the estimate of \$550,000 for dredging operations in British Columbia.

Estimates in Detail.

Main estimates for Kootenay are:

Cranbrook—Public buildings, \$25,000;
public buildings renewals, \$15,000.

Fernie—Drill hall, \$20,000.

Golden—Public Building, \$25,000.

Revelstoke—Public building, \$50,000.

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Trail—Public building, \$20,000.
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 Beaton—Wharf, \$8,500.
 Boswell—Completion of wharf, \$1,400.
 Columbia and Kootenay rivers—Improvements, \$20,000.
 Columbia River—Survey to ascertain navigability from boundary, \$15,000.
 East Arrow Park—Wharf, \$7,500.
 Grey Creek—Wharf, \$5,000.
 Harbors, rivers, bridges, general repairs and improvements, \$5,000.
 Invermere—Wharf, \$18,000.
 Kootenay Bay—Wharf, \$7,500.
 Needles—Wharf, \$7,500.
 Renata—Wharf, \$7,500.
 Shutty Beach—Wharf, \$6,000.
 Willow Point—Wharf, \$10,000.
 Supplementary estimates for Kootenay are as follows:

Additional Wharves—Dredging Plants

Columbia and Kootenay rivers—Wharves generally, \$25,000.
 Crawford Bay—Wharf Improvements, \$1,500.
 Silvertown—Wharf, \$3,500.

Windermere—Wharf, \$1,500.
 New dredging plant for Kootenay—\$100,000.

Included in the supplementary estimates is also an appropriation of \$11,000 for the equipment of the new plant at Ottawa for the testing of Canadian ores, a further step to assist the mining industry, for which Mr. Green was largely instrumental.

BRITISH COMMENT ON THE ORIENTAL QUESTION.

If it be true that Japan wishes to carry the Californian land question to the Hague tribunal, we may shortly obtain a fruitful lesson in the practical limits of arbitration. If the Chinese and Japanese are to have free entry to the Pacific coast it means eventually the extirpation of white labor from that region. All the arbitration in the world will not persuade the people of the western states that it is their duty to give up their bread and butter to an alien race, and we can imagine how much likelihood there is of the government at Washington taking measures to enforce such an award on its own subjects. We should rather like to see the experiment for its usefulness in bringing dreamers back to hard facts.—Pall Mall Gazette.

A NOVEL CHEWING GUM.

One of the troubles of most European armies is that those soldiers who can get hold of it, insist on using that terrible explosive cordite as if it were a sort of chewing gum, says an exchange.

Its popularity is due to the fact that when chewed in small quantities it has a stimulating and exhilarating effect, like small doses of alcohol. Its taste, too, is sweet, cordite being three-fifths nitro-glycerine, an explosive which is sugary to the taste.

When chewed in large quantities cordite becomes more powerful in its effects bringing on a blissful state of ecstasy, and sometimes making the victim of the habit see visions. But the real danger of the habit lies in the fact that though nitro-glycerine will only explode when given a very hard blow or touched by an electric spark, there is always the possibility that the grinding of exceptionally hard teeth might prove the necessary hard blow. Within the last few years, at least three soldiers—two German and one Austrian—have been blown to bits, the use of cordite as a chewing-gum being the suspected cause.

The habit was not unknown in the British army some years ago, till the military authorities took steps to stop it.

SENATE IS ON SUFFERANCE.

For a long time it has been apparent that the senate is allowed to exist on sufferance by the people. Were the naval bill thrown out of the senate, an issue involving a constitutional change which has been dormant through lack of interest would become important again.—Ottawa Journal.

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MR. R. F. GREEN, MEMBER FOR
KOOTENAY.

Now that the session at Ottawa is drawing to a close, the people of Kootenay have opportunity to judge of the first year's work of their new member, Mr. R. F. Green, who was elected by acclamation on May 30 last, in succession to Mr. A. S. Goodeve, on the latter's appointment to the railway commission, remarks the Nelson Daily News of the 28th inst.

That Mr. Green has, to use a hackneyed expression, made good, there are few, even of his political opponents, will attempt to gainsay. He has looked well after the interests of his constituents, and has established for himself a strong place among the government supporters at Ottawa. It is true, perhaps, that Mr. Green has not attempted to take any leading part in the debates. But when Kootenay needed him—when the lead bounty was before the house, for example—he was heard and heard effectively.

Mr. Green's work in other directions is seen in the various grants of the estimates, main and supplementary, for public works of various kinds throughout Kootenay, and his careful attention to all matters submitted to him.

Mr. Green's record during the session and during the past year generally demonstrates clearly and unmistakably that the people of Kootenay made no mistake when they elected Mr. Green by acclamation to serve them in the House of Commons.

John Vallance has severed his connection with the Standard mine at Silverton. He was foreman at that mine for more than eight years.

In the Lardo the gold dredge is working at Goldhill.

DOWN ON B. C.

The Liberal party at Ottawa, from Sir Wilfrid Laurier down, appear to have it in for British Columbia, remarks the Hedley Gazette of the 29th inst. under the above caption. Sir Wilfrid's opposition to the Highways Bill was largely aimed at British Columbia, which he is afraid might benefit by the federal grant which could be applied to give us a good highway over parts of the province that the Provincial Government have never felt justified in tackling themselves, as the cost would be greater than any local interests to be served would warrant; and yet it is a road that from a national point of view should be built, and the building of it is a duty which Canada owes to herself. Then there is the ill-concealed hostility of Hon. Frank Oliver who has started in to libel the province, district by district, and has already covered a considerable portion of it. The lead bounty which they themselves brought in when there was a chance for them to get some Liberal votes from the Kootenays, has now become in their eyes a most iniquitous thing and should be chopped off, even if in doing so the silver-lead mining industry of the Kootenays is to be strangled thereby and hundreds of miners thrown out of employment. Again, we have the lumbering and the fruit-growing industries of British Columbia, which have jointly and severally made themselves objects of suspicion to sundry Liberals in the House, and furnished cause for momentary outbreak from men like W. E. Knowles, of Moose Jaw. In fact, British Columbia has become hopelessly reprobate in the eyes of Sir Wilfrid and his henchmen, so far as any chance of getting political support is concerned, and they must vent their impotent rage at every turn and on the slightest pretext.

NEW REGULATIONS FOR LEASE OF
OIL LANDS.

An Ottawa dispatch of the 27th inst. says:

An order-in-council has been passed repealing the regulations in order to the leasing of school lands for petroleum and natural gas purposes adopted in 1905, and which were never put into effect, and substituting new regulations. These regulations provide that petroleum and gas rights in the three prairie provinces may be leased to applicants at a rental of 25 cents an acre for the first year and for each subsequent year at a rental of 50 cents per acre. The term of leases shall be for a period of 21 years, and they shall be renewable at the end of that period. No applicant will be allowed to lease an area of more than 640 acres.

DO THEY LIKE IT?

When Dr. William Waugh, chief surgeon of the Jefferson Park Hospital in Chicago, said that the ancient and honorable practice of wife-beating ought to be resumed, he was probably aware that he would incur the disapproval of the women's clubs. Indeed, it is strange that Dr. Waugh is still alive, but the latest reports show that he yet breathes and that his life may be prolonged indefinitely if he can keep out of sight.

And yet, a writer in a San Francisco paper points out, there should be no rancor toward this medical luminary in Chicago. He wishes no ill to women. He says that they like being beaten, that they not only need it, but that they welcome it and that a large amount of marital infidelity could be kept out of the divorce courts, could be avoided altogether, if the husbands would only do their duty with stick or strap.

Now it may be that there is something to be said for Dr. Waugh and that he is not quite such a son of Belial as he appears at first glance. Perhaps the women really like to be beaten. It is certain that women are never aroused to such a state of ecstatic sympathy as for the wife-murderer, and the more fiendish the murder the more they overflow in compassionate sentiment for the criminal. The last notable case was that of a genius somewhere in the middle west who murdered his young wife and then drove home, sitting on her body. After conviction the prison was besieged by adoring females, who bedecked the cell with flowers and begged for locks of hair in memory of the man who had not beaten, but murdered his wife. Now women rarely act in that way toward men who murder men, but they usually act in that way toward men who murder women. Why? Is it because they admire a display of brutal force toward their own sex? And would not these same women feel a certain sense of gratification at being beaten by their husbands?—Vancouver Province.

E. M. Sandilands, Government Agent, has been appointed registrar, for the purposes of the "Marriage Act," for the Queen Charlotte Islands.

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A NEW FORESTRY BULLETIN.

"Forestry Conditions in the Rocky Mountain Reserve," is the title of a pamphlet (Bulletin No. 33) just issued by the forestry branch of the department of the interior.

It contains the result of investigations made by T. W. Dwight, M.F., on the forests of the southern part of the reserve, which extends along the eastern side of the Rocky mountain from the international boundary for some distance north of the latitude of Edmonton.

The bulletin treats of the present general condition of the forests of the reserve and of the influence on them of various factors such as their height above sea-level, the number of trees per acre, etc. The effect of lumbering, fire

and other agencies on the forest is then discussed, and, after a short, scientific discussion of the different species and the manner in which they are growing up to form the new forest, the management of timber-cutting operations is considered. Among the topics treated under this head are the disposal of the brush, the method of marking trees for cutting and the cost of maintaining forestry methods. A short consideration of the practice on the U. S. National Forests in Montana, where the forests are very similar in character to those of southern Alberta is given, and the bulletin concludes with a number of technical forestry tables.

The Cariboo road is dotted heavily this year with prairie schooners on their way to points beyond Fort George.

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BRITISHERS FOR B. C.

A Winnipeg dispatch of the 17th inst. says:

The immigrants destined for all points in British Columbia who have arrived in Canada from ocean ports and passed through the city of Winnipeg are numbering about one hundred each day.

About ninety per cent. of these settlers are of English or Scottish origin. British Columbia is therefore getting a far higher proportion of British settlers than are the prairie provinces. The immigrants going through to British Columbia are an exceptionally fine class of people, and are usually better heeled in the way of cash than those who drop off in the city of Winnipeg or proceed to Saskatchewan or Albertan points.

THE CHIEF ROBBER.

Who is the chief robber?

"The tariff," said the importer.

"The lawyer," says the litigant.

"The politician," says the municipal reformer.

"The liquor dealer," says the Prohibitionist.

"Any employer of labor," says the Socialist.

"The landlord," says the Single Taxer.

"The middleman," says the producer.

"The government," says the taxpayer.

"The producer," says the consumer.

"The labor union," says the employer.

"Everybody," says everybody else.—Life.

AN AWFUL EXAMPLE.

Says the Phoenix Pioneer:
The Laurier way of spending money
has been exemplified.

In the Quebec bridge disaster.

In the construction of the National
Transcontinental railway at four hun-
dred per cent. more than its estimated
cost.

In the erection of the Laurier tower
which fell down, and the museum tower
which is breaking away from the main
building.

THE ORIGINATOR OF THE CLOSURE.

The "loyal opposition" at Ottawa have
little to complain of in the matter of
that closure resolution, remarks the
Phoenix Pioneer. Did not the greatest
Liberal of this or any other age first
introduce it into the mother of parlia-
ments at Westminster, and has not its
application been the means of passing
legislation of stupendous moment to the
working classes of Great Britain and
Ireland.

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The Scotch will have no difficulty in
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gars; the bagpipe is the Bulgarian na-
tional instrument.—Chicago Record-Her-
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2 00	3 00	7 45	0 Victoria	6 30	10 55
2 08	3 10	7 53	1 Hillside Ave.	6 22	10 45
2 20	3 25	8 05	6 Royal Oak	6 10	10 20
2 25	3 32	8 10	7 Beaver Lake	6 05	10 10
2 30	3 40	8 15	9 Elk Lake	6 00	10 00
2 37	3 55	8 22	11 Keating	5 54	9 47
2 43	4 10	8 28	13 Saanichton	5 47	9 35
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The British Columbia Mining Exchange

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No. 6

The Mining Situation in B. C.

(Written for the B. C. Mining Exchange by E. JACOBS)

Conditions in the Mining Industry in British Columbia are Excellent—Present Indications Point to Record Output of Last Year Being at Least Equalled—Steady Progress in Development Work—A Most Encouraging Record for the Half Year



Looking up Bear River from bridge near Stewart, Portland Canal, B. C.

Ore receipts at the Consolidated Mining and Smelting Co.'s smeltery at Trail during the six months to July 1 have been about 170,000 tons. Exact figures are not yet available, but it is known that the aggregate for the half year will be approximately that quantity. A rough apportionment shows the sources from which ore was received to have been as follows: From mines in East Kootenay, 18,000 tons; Ainsworth, 5,000 tons; Slokan, 12,000 tons; Nelson, 5,000 tons; Rossland, 113,000 tons; Boundary, 4,000 tons; Lardeau and other small shipping districts, 1,000 tons; United States, 12,000 tons. These figures do not include ores milled, but only the concentrates from such ores. An estimate of the quantity of ore received at Boundary district smelting works during the same period places it at 950,000 tons—620,000

tons at the Granby Co.'s smeltery at Grand Forks and 330,000 tons at the British Columbia Copper Co.'s reduction works at Greenwood. Included in the latter amount is about 20,000 tons from United States mines; otherwise practically all the ore was from several mines of the respective companies. Then, the production of the Britannia and other mines in the Coast district was probably about 100,000 tons for the half year. Allowing 100,000 tons for other ores, not sent to smelting works but treated in stamp mills or concentrators, it is evident that the aggregate output of the lode mines of the province during the expired half of the year has been about 1,320,000 tons. As the aggregate for the year 1912 was 2,688,000 tons, it would seem that this year's output of ore has thus far been approximately

similar to the rate recorded for last year.

A Brief Review.

Briefly reviewing the position, mention may be made of the leading metal mines in the various districts, as under:

In East Kootenay, the Sullivan Group mines are the only important present producers of ore. Their output for the half year has been nearly 18,000 tons. The Monarch, in Northeast Kootenay, was also worked.

In West Kootenay, the several mining divisions worthy of mention are Ainsworth, Slokan, Nelson and Trail Creek (Rossland.) The Bluebell, near Kootenay Lake, made a comparatively large output of lead ore—somewhere about 30,000 tons. Other mines in Ainsworth

division that sent out small quantities of ore were the No. 1, Silver Hoard, Florence Co's and Utica. Development was continued on Retallack & Co.'s Whitewater group and on several other properties.

In Slocan district, the Lucky Jim and Noble Five mines shipped zinc ore, while the Rambler-Cariboo, Richmond-Eureka, Standard and Van-Roi sent out silver lead products—ore and concentrate. The two last-mentioned also shipped zinc concentrate. Others that had more or less work done on them, and in some cases shipped ore, are the Payne, Ruth-Hope group, Slocan Star, Surprise, Silverite, Cinderella, Idaho-Alamo, Hewitt-Lorna Doone, L. H., Eastmont, Ltlly B., and a number on which operations were less important.

In Nelson division, the Queen Victoria (which shipped 13,000 tons of ore to the smelter at Greenwood), Eureka, Granite-Poorman, Molly Gibson and Silver King group, in the northern part of the division; the Dundee, Yankee Girl, and Wilcox, in Ymir camp; the Emerald and H. B.—both lead mines—near Salmo; the Queen and Motherlode, in Sheep Creek camp, and the Arlington and Second Relief, in Erie camp, constituted the chief working mines in this division.

Rossland mines, in Trail Creek division, made a production of about 123,000 tons, this including the ore concentrated at the mill of the Le Roi No. 2. Of this total about 102,000 tons was from the Consolidated Mining and Smelting Co.'s Centre Star and Le Roi groups, and practically all the remainder from the mines of Le Roi No. 2, Ltd. The destruction by fire a few weeks ago of the big head frame, shaft house ore bins, etc., of the War Eagle mine, while not seriously interfering with ore production, occasioned the Consolidated Co. some inconvenience and loss. The Inland Empire gold mine and stamp mill, in this division, was operated when weather conditions permitted.

Turning to the Boundary district, which produced between 900,000 and 1,000,000 tons of ore, it may be noted that both the Granby and British Columbia Copper Companies continue to regularly maintain a comparatively large output of ore—the former from its big copper mines in Phoenix camp, and the latter from its Mother Lode mine and the New Dominion Copper Co.'s Rawhide mine. The Consolidated M. and S. Co.'s No. 7 mine shipped about 3,700 tons of ore to the company's smelter at Trail. Additional plant and machinery was put in at the stamp mill of the Jewel-Denore Mines, Ltd., and preparations were made for mining and milling ore. Several other properties were worked in a small way, but they did not add much to the total of ore production.

In Similkameen district, the only producer was the Hedley Gold Mining Co.'s Nickel Plate group, with an output of about 35,000 tons, and a recovery of gold valued at approximately \$450,000. The British Columbia Copper Co. continued doing exploratory work on a number of mineral claims on Copper mountain, a few miles from Princeton, with results that are stated to promise favorably for the establishment there of a productive copper camp. Some work

was done on placer gold claims on Granite creek, and the development of several mineral claims in Summit camp, at the head of Tulameen river, was continued.

In the Coast district, the Britannia, near Howe sound; the Marble Bay, on Texada island; the Surf Inlet Gold mine, on Princess Royal island; a considerable total of work in the Omineca division of the Skeena country; the important development work continued at the Granby Co.'s Hidden Creek mines, and the preparations for the establishment of a 2,000-ton smelting works; the operations of the Portland Canal Tunnels, Ltd., the Indian Mines, Ltd., and others in Portland Canal district, and the work done on Queen Charlotte islands—all these contributed to a total of work and progress that augurs well for substantial improvement in the metal mining industry in this district.

No detail can now be given relative to placer gold mining in Cariboo and Atlin districts, nor of coal mining in various parts of the province. As to the former, it may be said that the gravel washing season opened auspiciously, with much snow on the mountains and cool weather to ensure its melting only gradually. It is hoped that there will be plenty of water late into the summer, and that autumn rains will assist in prolonging the operating season. Concerning coal mining—it is thought that production is being well maintained in all the coal mining centres of the province, save only in Nanaimo district, where there are labor troubles.

The Rambler-Cariboo Mine.

On June 13 the "Spokesman-Review," of Spokane, Washington, published the following concerning the Rambler-Cariboo, one of the best-known mining properties in Slocan district: "According to a report received yesterday by Walter J. Nicholls & Co., the Rambler-Cariboo mine, in Slocan district, B. C., up to May 1 had shipped 250 tons more ore to the smelter at Trail than the total output of the mine in 1912. The shipments for the period covered by the report aggregated 1,403 tons, as against 1,153 tons for the whole of 1912. Last week the quantity shipped amounted to 189 tons, and the company is preparing to increase operations. The new concentrator is turning out 300 tons of concentrates weekly, and the output is to be augmented, according to the report, as a higher grade mill feed is being extracted for treatment. All kinds of rumors are being circulated locally in explanation of the sudden drop in the price of Rambler-Cariboo shares, the most persistent being that the concentrator, completed but recently, will have to be rebuilt, the system having proved inefficient, but officials of the company vigorously deny this, and assert there is nothing in the financial condition of the company to warrant the break, and that there is nothing wrong with the property physically. There are between 350 and 375 shareholders in the Rambler-Cariboo Company, most of them residents in the Inland Empire, and the recent rapid decline in the price of the shares, coupled with the resignation of Mr. W. E. Zwicky, the former general manager, has caused some uneasiness among them."

Salmo.

In a report of meetings of the Labor Commission, which has been holding meetings in various parts of British Columbia and taking evidence concerning labor conditions, the following reference to the position at the Queen gold mine, in Nelson mining division, is made: "Queen mine has a labor dispute, which is a hopeless tangle. Up to a little while ago there were 45 men employed at the mine; now there are 24. The men who have quit say there is a strike; the men who have remained at or returned to work say there is no strike at all, and that they are good unionists who are satisfied with their conditions. They say, further, that the men who have quit were induced to do so by misrepresentation. To an outsider the whole thing looks like an illustration of the pernicious activity by which a certain type of labor agitator often makes himself a public nuisance. In this particular instance, as in many others, the men who have stirred up the row are reported to have come from the United States."

NEWS FROM MINING CAMPS.

Rossland.

The War Eagle shaft house and contiguous buildings, on Red Mountain, have been utterly destroyed by fire. The Rossland Miner states that the shaft house was erected in 1898-9, under the direction of Mr. John B. Hastings, shortly after the Gooderham-Blackstock Syndicate, of Toronto, Ontario, acquired the War Eagle. The building is described as having been about 100 ft. long by 40 ft. wide and 100 ft. high, with four floors. In it was a lot of mining timber ready for being sent underground. It was here that a large electrically operated hoist was put in, but after much trouble in operating it and eventually some fatalities having occurred through its not having been properly controllable, it was taken out. Other buildings destroyed with the shaft house were ore bins, 50 by 20 ft., and the tank house, with a 60,000-gal. wood tank. The shaft timbers burned to about 25 ft. below the collar, but the fire did not get lower, for a bulkhead was put in at the 100-ft. level and streams of water, both at the surface and on that level, prevented the spread of the flames downward. The destruction of these surface works will not seriously interfere with mining operations, for the Consolidated Mining and Smelting Co. has long hoisted its ore through the Centre Star main shaft and used the War Eagle shaft for lowering men and handling mine timbers and waste. The monetary loss is stated to be about \$50,000, only partly covered by insurance.

Boundary.

The refinery returns for the month of April show the Granby Co.'s production of metals to have been as follows: Copper, 1,857,452 lbs.; silver, 26,403 oz.; gold, 4,603 oz. The production of metals during four months, January-April, was: Copper, 7,396,871 lbs.; silver, 103,352 oz.; gold, 15,510 oz.

The Granby Consolidated Co. is adding a lot more power tools to the equipment of its machine shop at Phoenix. Many heavy steel ore cars are being made in this shop for the company's mines at Hidden Creek Observatory Inlet, and others for the local mines.

Much drilling has been done in the British Columbia Copper Co.'s Mother Lode mine, in Deadwood camp, preparatory to breaking down another very large block of ground. About 3,000 holes, averaging 14 ft. each, have been drilled. Whenever ore in addition to that already broken down shall be required, all these holes will be charged and will be fired simultaneously by electricity. It is estimated that this blast will break a larger quantity of rock than any previous one. From 300,000 to 350,000 tons is the approximate quantity that will be broken down and

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Osoyoos.

The Dividend-Lakeview Consolidated Gold Mining Co. is developing its Dividend mineral claim, situated on Kruger mountain, near Osoyoos lake. The group includes the Dividend, Lakeview and Gold Dust claims, but at present work is being done only on the Dividend. Ore is being hauled in a 5-ton motor truck to the railway at Oroville, nearly seven miles distant, and is taken thence to the Granby Co.'s smeltery at Grand Forks, Boundary district. Value is in gold and silver, and owing to the high freight cost, only ore running \$25 a ton or higher is shipped. The property is situated within a short distance of the International Boundary line. Just across

At the Hedley Gold Mining Co.'s Nickel Plate mine, the greater part of the work is being done from No. 4 adit level, and to facilitate operations buildings are being erected near the portal of this tunnel. A new blacksmith and machine shop—a wood frame building roofed with corrugated galvanized iron, dimensions 95 by 35 ft.—has been erected, and this is being equipped with all necessary power tools and other mechanical appliances and plant. Another building includes store and warehouse, the former 50 by 35 ft., and two storeys high, and the latter a single-storey compartment, 90 by 35 ft. Ground is being graded for a building to comprise cook house, dining room, wash rooms for men, recreation room, etc., to be of similar construction to above-mentioned buildings and to provide accommodation for about 150 men.



Foot of Glacier—Source of Bitter Creek, Portland Canal.

available for shipment to the company's smeltery at Greenwood after this blast shall have been fired.

A first carload shipment of ore has been made from a property named the Sunnyside, situated on James creek, a tributary to the main Kettle river. Higher up, on the west fork of Kettle river, mining is being done on two or three properties in the vicinity of Beaverdell, after general inactivity owing to absence of railway transportation facilities. Now that the railway has been constructed mining has been resumed.

The Silver Standard workings at Hazelton have been surveyed. The shaft, now 250 feet deep, has a vertical depth of over 200 feet. A crosscut is being driven to tap No. 3 vein under the shaft on that lead.

the line, in the State of Washington, the Golden Chariot and other claims in the vicinity are also being developed.

Hedley.

There is little mining work being done in Hedley camp, Similkameen, other than that on the Hedley Gold Mining Co.'s property. One exception is the New York No. 2 Syndicate, which is operating two diamond drills, capable of drilling to a depth of 2,500 ft. Both water and compressed air are conveyed from the Hedley Gold Mining Co.'s mine, the pipe lines being each about 5,000 ft. long. The claims in which the drilling is being done are held by the syndicate under option of purchase. The object of the work is to prove whether or not the Nickel Plate ore bodies extend into the ground being drilled.

Last year's development and diamond drill work having warranted the estimate that the minimum quantity of reserve ore available in the company's Nickel Plate and Iron Duke claims was 413,000 tons of an average value of at least \$11.35 per ton, another incline shaft, known as the Dickson incline, is being sunk to mine the new ore bodies then developed and others also below the level of No. 4 adit of the Nickel Plate mine. This incline is being sunk to the northwest on the pitch of the lowest known ore body in the mine. The intention is to sink it to a depth of 3,000 ft. It is so situated as to be under all the ore bodies and will have pay ore above it continuously for 1,100 ft.

No. 5 incline has been sunk, in the same direction as the Dickson, to a depth of 420 ft. and four levels have

been opened from it. There are in this part of the mine three known ore bodies lying directly one above the other, and this incline has been sunk in the middle one. Drifting and sinking have proved the ore to be about 16 ft. between walls, and its average value is \$14 a ton. At the collar of the incline the length of the ore shoot is 130 ft.; at the 100-ft. level it has been drifted on 180 ft., and on the third level 120 ft. These drifts are in good ore all the way, and their faces, as well as the bottom of the incline, are in ore. This incline is in favorable condition for ore shipping, with ore pockets on each level and plenty of good ground for stopping.

No work is being done in the company's Sunnyside mine, owing to lack of power, nearly all available being used in connection with operations in the Nickel Plate mine. Some time since the company made application for water rights on Similkameen river, but it has not yet been able to secure the water rights on Similkameen river, but purposes, owing to other applicants, stated to be only speculators and not bona fide operators, having forestalled it and so prevented it this year carrying out its plans for important extensions of its mining and milling operations.

The quantity of ore crushed during five months of 1913, to June 1, was 29,180 tons and the value of the recovered gold \$377,483.14. This gives an average recovery of \$12.936 a ton, as compared with \$10.18 a ton for 27,936

tons crushed during the corresponding period of 1912, and with \$10.62 a ton for 70,455 tons crushed during the whole of 1912. Assuming that the total costs were not higher than for 1912, when they averaged \$5.14 a ton, it would appear as if the net profit for the five expired months of 1913 has been at an average rate of approximately \$7.80 a ton.

Princeton.

While the British Columbia Copper Co. has not done any development work during the last six months on the large group of mineral claims, known as Voigt's group, it had been exploring under option of purchase, it has done much work on another group, also on Copper mountain and about a dozen miles from Princeton, the latter being in what is known as Princess camp. Some nice-looking copper ore has been found, in prospect workings and by diamond drilling. Latterly operations have been further extended—to the southern part of Copper Mountain camp. Twenty years ago there was staked a group of three claims, known respectively as the Vancouver, Sunset and Helen H. Gardner. In big surface showings of ore there was much bornite, and underground development proved that this continued to the depth of 150 or 200 ft. However, there was no railway anywhere near, even when the district had renewed attention seven or eight years ago. Very many mineral claims that have thus been, during the last twenty years,

staked on Copper and Kennedy mountains have had little important development work done on them until the last two years. Now there is work being done on a number of them, and it is hoped results will be sufficiently good to ensure the establishment of a permanent mining industry there.

Granite Creek.

Messrs. J. A. Anderson and Andrew Gordon have been working for several years on ground situated about half a mile higher up the creek than Lambert & Stewart's dam. Lately they have been drifting with the object of finding an old channel at a higher level than that of the present creek. Other work done last year on the same bench gave varied results, the best having been a pocket of about 5 oz. of gold recovered in one place. At the present time water is causing the workers much trouble, the seepage from the hill above the drift amounting to quite a stream of water. In order to try to keep the drift dry, an Edison wrecking pump was lately obtained. There are indications that the drift is entering an old channel, and Messrs. Anderson & Gordon, who have been most persistent with their operations, are feeling hopeful accordingly.

Now that the high-water season has passed, and Messrs. Lambert & Stewart's dam across the creek, just above the mouth of the north fork, has stood the summer freshets, preparations are being made to carry out the intended

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method of working the creek for about 1,000 ft. below the dam. As soon as the water shall be low enough for the flume, that has been constructed for the purpose, to carry the stream, the water will be diverted, and then a bed-rock flume will be taken up the creek bed and the pay dirt, from the top of which some 6 ft. of overburden has been removed, will be sluiced. Commencing at zero, at the lower end of the canyon, the gravel gradually increases in depth to about 15 ft. just below the dam. The dirt has been prospected, and it is confidently expected to yield good pay in both gold and platinum, in the proportion of about two of the former to one of the latter. Much interest is taken locally in this enterprise, for, if successful, it is expected it will lead to the working of some 12 to 14 miles of Granite creek above Lambert & Stewart's ground.

Coalmont, the new town dependent largely upon the operations of the Columbia Coal and Coke Co., of Winnipeg, Manitoba, is feeling the effect of the suspension of work on that company's coal property. After a long cross-cut adit had been driven and much other work done in connection with it, it was found necessary to abandon it and do work from the Collins Gulch side of the mountain. It is stated some good coal has been opened in the later workings, but owing to exhaustion of funds all work has been stopped pending making fresh arrangements for financing the undertaking.

GENERAL NEWS.

Work has been commenced at Michel, grading over No. 8 slide, says the District Ledger, to reach the new prospects opened some time ago, and where two tunnels are being driven.

An ambulance competition is to be held in connection with the sports on July 1, when four gold medals are to be given to the winning team, a medical man to be judge of the competition. This will be the first competition of the kind to be held in Michel confined to members of the Michel Ambulance Association.

The Granby Consolidated Co.'s production of copper for five months of the current year was as follows: January, 1,792,245 lbs.; February, 1,740,000 lbs.; March, 1,967,962 lbs.; April, 1,857,452 lbs.; May, 1,782,570 lbs.; total for five months, 9,140,229 lbs.

The clearing price for Hedley Gold Mining Co.'s shares on the Boston Exchange on June 24 was \$30. The par value of the shares is \$10, and there are 120,000 issued. Dividends to the amount of \$3 per share were paid in 1912, and this year two dividends, each of 50 cents a share, have been declared.

A fatal accident occurred at the Le Roi mine, Rossland, on June 28. Henry Burt, a Lancashire man, while working underground, struck a stick of dynamite with his pick, and the resulting explosion killed him instantly. It is thought the dynamite was blown out of a missed hole.

A miner named E. Shallenburg was killed on June 9 by a fall of rock in the Second Relief mine, near Erie, Nelson mining division. A report from Ymir stated that a part of the hanging wall became detached and fell while he was at work under it, and that death was instantaneous.

A report that has been given publicity is as follows: "The British Columbia Copper Co. will spend \$100,000 in the erection of a concentrator at the Voigt properties, near Princeton. The action is prompted by results obtained from diamond drilling and other investigations during the last two years." It may be stated as a fact that the company has no present intentions of putting up concentration works on the Voigt property, at which it suspended work some time ago, owing to negotiations for the purchase of certain interests in the group having failed to bring about an agreement to that end.

The low-level tunnel being driven by the Portland Canal Tunnels Co., about 3½ miles from the town of Stewart, at the head of Portland canal, was in 1,400 ft. by about the middle of June. It is estimated that a further distance of 900 ft. will have to be driven to reach the fissure zone at that depth.

A drilling contest is to take place at Rossland on July 16, open to all union men in good standing. Fifteen minutes will be the time allowed for each team to drill. The first prize will be \$100 and the second \$50.

Development of the Milly Mac mine, near Burton, Arrow lake, will be continued this summer.

The 10-stamp mill of the Coronation Gold Mines, Ltd., operating on Cadwallader creek, Lillooet mining division, has been started crushing ore from the company's mine nearby. It is stated that a mill will shortly be placed on the Pioneer claim, in the same locality.

Requiring siliceous ore for metallurgical purposes, the Consolidated Mining and Smelting Co. lately resumed work at its No. 7 mine, situated several miles from Boundary Falls, Boundary district. After having shipped nearly 4,000 tons of ore to Trail, operations were suspended.

A report published in Spokane, Washington, is to the effect that during four months, to May 1, ore shipments from the Rambler-Cariboo mine, Slocan, totalled 1,403 tons, as compared with 1,153 tons during the whole of 1912. The quantity of crude ore and concentrate received at Trail from that mine during six months, to July 1, was approximately 1,600 tons.

Negotiations have been in progress for some time with the object of securing the use of the electro-thermic smelting plant at Nelson for the purpose of completing the investigation, by the Mines Branch of the Canada Department of Mines, of the application of electric smelting to the zinc ores of British Columbia. It is probable that the plant will be in operation during the ensuing autumn.

A miner named William Wills, a Cornishman, 44 years of age, lost his life

as a result of inhaling powder fumes in the Highland mine at Ainsworth on June 26. His fellow-worker, Philip Sporr, managed to reach the fresh air before falling unconscious, and when found by the mine foreman was promptly given treatment that restored him to consciousness. Wills fell with his mouth and nostrils in three inches of water in a drain at the side of the tunnel, and was dead when found.

The annual meeting of the Argo Tunnel Co. was held at Greenwood, Boundary district, towards the end of June. The officers and directors elected are as follows: Ola Lofstad, president, Jas. McCreath, secretary; R. Floyd, C. Hammerstadt, A. O. Johnson, F. L. White and J. Williamson, directors. The tunnel is now in a distance of between 700 and 800 ft., and Mr. Lofstad, who is in charge of the work of driving it, is confident it will soon cut a vein of ore of good grade.

REPORT OF THE ANNUAL MEETING OF THE B. C. OIL & COAL DEVELOPMENT COMPANY, LIMITED, 1913.

A good representative meeting of the company was held in Mr. Bagshawe's office, Pemberton Block, Victoria, B. C., on the evening of June 16th, there being present members from Manitoba and Saskatchewan, with proxies from the shareholders of their representative districts, as well as members from Vancouver and Victoria.

The president called the meeting to order at 8 o'clock, and the secretary read the notice of the meeting and financial statement.

The company's general manager in his annual report stated that owing to conditions that were impossible to foresee, all had not been accomplished that had been anticipated. It was expected that the Government wagon road from Corbin, B. C., to the drilling location on Sage Creek, would have been completed by early fall, and with this in view, some three carloads of drilling machinery, casings, etc., were landed at Corbin in August, and the freighting of same began. The Government road at that time was only completed about 16 miles out of Corbin, so this machinery was transported to the 16-mile camp. The wagon road was not completed until the 8th day of October through to the International Boundary; there still remained five miles of a road to be built from the main Government wagon road to the drilling location, which was done by the B. C. Oil & Coal Development Company, and on the 18th day of October about 18 inches of snow fell. This wagon road was hastily constructed by sawing off the trees, and in some cases blowing out the stumps with dynamite, which left deep mud holes, and being a new road through a timber country, and the fall a wet one, there was absolutely no bottom to the road, and it was all the team could do to get over the road with less than 1,000 pounds.

It took seven days or more to make the round trip from Corbin to the drill-

ing site, and 600 pounds of the 1,000 hauled, was feed for the team, grub and bedding for the teamster, so you see that this plant consisting of three car loads, was hauled in at the rate of 300 pounds of equipment per man and team. Many times, man and teams were compelled to sleep out in the rain and storm, for weeks at a time; this constant exposure killed about 13 head of horses. After the snow came it never froze hard enough to bear up the team, and the snow fell so fast at times, 3 feet in 24 hours, that it was impossible to keep the road open, even with 26 to thirty horses on it constantly. The Government wagon road crosses the

Mr. Snider, the company's contractor, in the meantime had sent to Belton, Montana, for a couple of teams, to remove the casing from the 35-mile camp to the drilling location. These teams at the last report, were nearing the drilling location on Sage Creek, and by this time, no doubt, have hauled casings to the well, and drilling operations have been resumed. It is believed that the next forty or fifty days will begin to prove the property, as a big drill will go down very fast from now on.

The financial condition of the company was most favorably commented upon, as shown by the auditor's report, and every one at the meeting felt very

Two shareholders were present, who had just returned from the property, accompanied by two mining engineers, who were in the employ of the Chicago, Milwaukee & St. Paul Railroad. They brought back half a gallon of very fine oil, which they had taken from a shallow hole two feet deep, which they dug at the big seepage. They personally secured the opinions of these mining engineers, as to the district being an oil field. They saw the big drilling plant ready for operation, also the contractor and his drillers; they were really very enthusiastic as to their connection with the company. After having made a trip in there and seeing the conditions which existed, they were satisfied that every effort had been made that could be made to get development work started.

A resolution was passed increasing the number of directors from seven to eleven; the following men were elected for the ensuing year: A. Anderson, E. C. B. Bagshawe, H. M. Carsley, G. T. Gould, W. Mulholland, W. A. Greer and W. E. Tweed, leaving four to be chosen later. After the shareholders' meeting the directors met and appointed the following officers: E. C. B. Bagshawe, president; M. H. Carsley, vice-president; A. T. Abbey, secretary, and A. Anderson, general manager. These officers were also appointed as an executive board, to pass all bills and along with the solicitor to attend to all contracts, agreements, etc.

The president thanked them for their renewal of confidence in him and assured the shareholders that he would look as much, or more carefully into the affairs of the company, before allowing the money to be paid, as he would if it were his own private busi-



Left to right—Government Agent J. S. T. Alexander, and Fire Warden W. Wilmot, Fernie, B.C., inspecting big oil seepage indicated in the above photo. The Provincial Mineralogist says: "It is not a question of seepage out of any surface material but of a spring coming up from the formation underlying the surface deposit, and carrying oil." E. J. Roberts, General Manager, Flathead Trading Company, Corbin, B.C., at the big oil seepage on Sage Creek.

Flathead River six times between Corbin and the drilling location, and none of these crossings had been bridged by the Government. When the river began to freeze along its edges, the B. C. Oil and Coal Development Company was compelled to bridge five crossings, and some five or six lesser streams.

The freighting was continued up till Christmas, overcoming all these adverse conditions, so that by the end of the year the drilling plant was in operation, and the well down 150 feet; the only equipment wanted was the well casing, which was still at Corbin. On December 23rd a tremendous snow storm set in, which lasted for more than ten days, and it took two weeks of constant road breaking, with some 15 teams, and men shovelling, to reach the 16-mile camp, twenty odd tons of casing was freighted as far as 16-mile camp. Then the men and teams began freighting it on down to the 35-mile camp, shovelling almost the whole way. By the time the casing had been freighted down to the 35-mile camp another snow storm had set in, accompanied by soft weather and rain, which has made the road impassable ever since.

Three or four of the teams have been caught between the two camps, and have been there for some six weeks, unable to get either up or down, oats for one team having been packed in on snowshoes to keep them alive.



This oil seepage is an interesting sight and indicates beyond doubt a rich deposit.

much elated over the excellent condition of the company's treasury.

Subscribed stock at par.....	44,650.00
Paid-up stock at par.....	28,906.65
Freighting, casing, well equipment, etc.	9,716.11
Cash in bank	\$ 7,139.50
Amount due on the bona fide subscriptions	15,743.35
Leaving cash in bank and subscriptions due	22,882.85

ness, and while there was no remuneration in it, but a great deal of responsibility, he, as a shareholder, would do his best. He stated that he realized the great possibilities of the oil industry, though he felt at the present time, that there was no honor for a business man to be connected with oil development companies, he realized the great need for oil in Canada, and if all business men would take this attitude towards the oil industry, it would not be long before the oil resources of the province

would be thoroughly tested. He stated that he saw no reason why the company's property of Sage Creek would not be thoroughly tested before fall, and as the drilling location had been located by the very highest oil authorities, he had every faith in the first well being a big oil producer.

Statement by Reporter of B. C. Oil News—A Shareholder.

A great deal of interesting information regarding the company's operations in the field, was given at the annual shareholder's meeting, held on June 16th, 1913.

The reports of the president and managing director, coupled with the statements made by several heavy shareholders who had made recent investigations for themselves, revealed a story of adventurous pioneering and of successful achievement under almost impossible conditions, which probably could only be paralleled by referring to the history of other Western enterprises in unexploited districts.

Mr. Anderson, managing director, gave an outline of what had been done, and apologized for the fact that the anticipations held out the year before had not been fully realized, but, as Mr. Greer, one of the shareholders, subsequently said, this apology was not needed.

It appears that the Government road from Corbin, the absence of which had held up the company's operations for so long, was not begun until late in 1912, and the work for the year was not finished until late in October, and when finished was of the most meagre and inadequate description, being little better than a broad trail. Also this road, such as it was, did not extend to the company's property, although surveys were made. The result was, that the company, at its own expense, had to build some seven bridges and five miles of road from the Government road to the site of the drilling on Sage Creek. This road follows the Government survey and was immediately used by the public at large, and attempts have been made, which have not so far been successful, to obtain compensation from the Government for this work. The building of this road included the construction of at least seven bridges.

Directly it was feasible, the hauling in of the machinery began, but none of the roads being metalled, and the season being bad, the difficulties encountered were enormous. The snow set in early, and it was only by superhuman exertions that the drill was got to the spot last year in time to carry out the company's obligations. It was done, however, and the drill set up and a certain amount of drilling was done. It was not possible, however, to get the heavy casing in to the drill before the heavy snows set in. It was safely got past all the bridges, but could be brought no farther; the abnormal snowfall being so heavy that the teams sent in could neither get forward or back, and remained there all winter. The result of this was, that after doing a certain amount of drilling the ma-

chine had to shut down, pending the melting of the snow.

It will give you some idea of the difficulties encountered in this work of freighting machinery and supplies, when it is said that some 13 or 14 horses were killed, and that although heavy sums were paid out by the company, yet every teaming contractor lost heavily on his contract. There is, however, today a large supply of casing on the spot, and there will be ample opportunity this autumn to get in further supplies when needed, so further delays on this account need not be anticipated. In fact, drilling would have been commenced earlier than it has but for the fact that the abnormal snowfall last winter has made equally abnormal high water this spring and early summer. In fact, within the last thirty days, a permanent bridge over the Columbia Falls was carried away, although this bridge had stood unharmed by previous floods for ten years.

Mr. Greer, of Oxbow, Sask., who is a heavy stockholder in the company, spoke most interestingly and convincingly on this subject. He had been on the ground himself, and had personally observed the conditions, and informed

the same lines, regarding the big oil spring, and explained how at a small expense the surface waters could be diverted. On this being done, it would be feasible to sink a small shaft making a shallow well, which would in all probability yield handsome profits on a small scale, a procedure which was successful in Pennsylvania, in places where the showings could not compare with those on the properties controlled by the company. He also made reference to conversations he had had with a prominent engineer, who had spent considerable time in the Sage Creek district, on behalf of the Standard Oil interests; and it may be remarked here, that the Standard Oil interests have departed from their usual rule of not acquiring the property in an unproved district. The showings, however, in the Sage Creek district are so exceptional that the Standard Oil interests themselves own large tracts of land reputed to be oil bearing, and developments upon them are expected this year. Also a small refinery is being brought in, which will be of great assistance to all concerned.

Mr. Snider, our driller, told Mr. Trenouth that the oil in this district was



Photo of band wheel installed in the drilling plant of the B. C. Oil and Coal Dev. Co. on Sage Creek. This band or belt wheel is 14 feet in diameter, and has 5 inch solid steel crank pin. The rig irons, driving shaft, drilling stems, etc., are all of the best steel, and five inches in diameter; 40 horse power boiler and engine. It is the strongest drilling plant I have seen in Canada and should be capable of drilling 4,000 feet deep if necessary.

himself by private conversations with disinterested persons in the district, who would give him reliable information. He saw the high water and the remains of the snow himself, and as a practical man assured his fellow shareholders that what had been done almost amounted to a miracle, and that no mortal man could have done more, and that while money might have been saved on the freight bill if no attempt had been made last fall to have started drilling, yet he considered that the directors have done right in that they had kept their promises and had advanced things to a point which assured an uninterrupted season's work this year.

Mr. Greer made also careful inquiries into the geological conditions, and with the help of an impromptu sketch map explained to the shareholders the lie of the formation, giving the reasons which led him to come to the independent conclusion that the company's experts had been right, when they selected the spot upon which the drilling commenced.

Mr. Trenouth, another heavy shareholder, who had also visited the property gave a very interesting talk along

better than the best Pennsylvania, and said that he had no doubt that a very rich oil field would be proved there in the immediate future. He also agreed with the company's experts in stating that the most judicious spot had been obtained for drilling, so far as surface indications went.

Mr. Bagshawe followed with a short address in which he found many reasons for congratulating the shareholders on their holdings, and was able to bear testimony to the way in which his co-directors had given their time and money to the project, without any remuneration whatever.

The board of directors was increased from seven to eleven, only seven directors were elected however, though they were given instructions to fill up the vacancies from time to time in such a manner as best to give representation on the board to the various districts in which the shareholders of the company reside.

Report by F. Trenouth.

Having just been up to the oil fields of the B. C. Oil and Coal Development

side of the line about the Sage Creek oil fields, and experts predict the opening of the largest field in North America, and with the high grade of oil already found, it will mean millions of dollars for the people interested.

THE HARRIS MINES, NEAR HAZELTON.

Now that the Grand Trunk Pacific Railway has been constructed through the Hazelton district of Omineca mining division, more mining development work is being done in that part of the Skeena River country than was practicable at reasonable cost when the district was entirely without railway transportation facilities. In a recent number of the Omineca Herald, published at New Hazelton, there was printed some information designed to show what progress had been made in the development of the American Boy group, now known as the Harris Mines.

The Hazelton district was visited in the summer of 1911 by Mr. Wm. Fleet Robertson, provincial mineralogist, who, as he stated in his published report, "proceeded to examine the various mineral claims in the district within possible reach of the approaching railway transportation." The report of the numerous claims examined is contained in the "Annual Report of the Minister of Mines, 1911," which may be obtained on application to the Department of Mines, Victoria, B. C. (until out of print.) The two sketch maps prepared to illustrate the report on parts of the Omineca and Skeena country are useful, for they give an excellent outline of the districts concerned. So that the impressions of the Government official of what he saw may be placed at the disposal of readers, extracts have been made below from his report, and these are followed by the first above-mentioned particulars from the Omineca Herald. It should be kept in mind that the information quoted from the provincial mineralogist's report relates to what he saw two years ago, while the newspaper account gives particulars of the conditions after much development work has been done.

Two-Mile Camp.

Under this heading the provincial mineralogist reported, in part: "The American Boy group, consisting of eight claims, owned by Harris Bros. and Mullen, of Hazelton, is situated on the eastern slope of Two-mile creek at an elevation of about 3,200 ft., and distant from Hazelton, by the trail, some seven miles.

"The camp and the various workings are on an easily sloping bench on the eastern side of, and several hundred ft. higher than, the valley of Two-mile creek, in a dense growth of large hemlock, spruce and balsam timber. The camp consists of a very good log cabin with tents.

"The development of the property has been done by the owners, with little outside assistance, and is made up chiefly by stripping trenches in sur-

face soil, uncovering the veins, and two small shafts.

"There are at least three parallel veins shown by the work done, and these are all of about the same general character, having a general north and south strike and a steep dip.

"No. 3 vein is probably the most promising, and has received the most development; it occurs on a very easily-sloping hillside, at an elevation of 3,200 ft., having been developed by an inclined shaft sunk 25 ft. in an argillite country rock, and shows a very well-defined quartz vein, averaging about 24 in. wide, containing a heavy percentage of galena, with some zinc-blende, iron-pyrites, and arsenopyrite. The vein has a strike approximately north and south and dips about 75 degrees; it is very regular and continuous, as has been proved, for some distance.

"An open cut, about 20 ft. to the north of the shaft, exposes the vein for a length of 10 ft., in which the vein shows clearly about 27 in. of white quartz with, disseminated through it, bunches and stringers of galena, etc.

"In the shaft, a few feet under ground, there appears on the hanging wall a light colored dike, which did not show in the surface workings. The vein, as exposed in the shaft, continues quite as strong to the bottom, varying somewhat in its width, but maintaining an average of 24 in. The mineralization in the vein also remains strong to the depth shown.

"As indicating the proportion of ore in the vein, it was noted that there was a pile of ore on the dump, amounting to about 30 tons, taken from the shaft in sinking the 25 ft. A sample taken by the writer, as roughly representing this ore pile, assayed: Lead, 11.5 per cent.; silver, 138 oz., and gold, 0.2 oz. to the ton. A second sample taken of the ore in another vein on the property assayed: Lead, 48 per cent.; silver, 125 oz., and gold, 0.02 oz. to the ton.

"No. 2 vein is a couple of hundred yards down the hill from No. 3, and has been exposed by stripping and open cuts for several hundred feet, which show it to be unusually regular and persistent, having a strike of N. 40 deg. W. and a dip of about 80 deg. to northeast, with a width of from 2 to 3 ft. The vein-filling is white quartz containing galena and a little zinc-blende, pretty generally disseminated through the vein, but in variable amounts at different places. The ore does not occur in a sufficiently concentrated form to be shipped direct, but would make a good concentrating ore.

"No. 1 vein lies still farther to the south, having about the same strike and dip as has No. 2 vein; it is some 3 ft. wide and has been traced by stripping for from 300 to 400 ft.; the vein matter and mineralization being similar to No. 2 vein.

"A shaft has been sunk on this vein for a depth of 35 ft., and it is reported that a drift 20 ft. long has been made at the bottom, but as the shaft was partly filled with water, this could not be seen.

"The property is one of much promise as a concentrating proposition, and is ideally situated for cheap mining. When the development in the present location at the outcrops shall justify it, an adit can be driven from the valley of Two-mile creek, where the plant would be situated and all the ore brought out."

A Present-day Account.

The following account of the development, etc., of the property, as at May 24, has been published in the Omineca Herald, admittedly by a firm having for its object the sale of shares in the Harris company to provide money for continuing development and making an output of ore:

"No. 1 vein opened by shaft 100 ft. deep on ore. Drift north 40 ft. on ore from the 100-ft. level. Ore along this drift is not of shipping grade, but vein and size of ore body all along very strong. At 80 ft. farther to the north on surface this vein is 3 ft. wide, with 16 in. of solid clean shipping ore, averaging \$90 per ton in silver and lead. The drift will be driven on the 100-ft. level to this point, where it is reasonable to suppose a fine shoot of ore will be encountered.

"No. 2 vein opened by a cross-cut tunnel 360 ft. long and taps the vein at 120 ft. depth. Drifting 45 ft. determines that the vein is badly broken at this point, but very high-grade ore in spots. Engineers advise active prosecution of work on this vein.

"No. 3 Vein—Incline shaft to 190-ft. level. Vein and ore strong and continuous all the way down; ore averaging \$100 per ton, varying in width from 6 in. to 3 ft. Drift off the 190-ft. level north is now in 170 ft. Shoot of extremely high-grade ore encountered at this point in the past week. The shoot is now 2 ft. 6 in. wide in the face with 14 in. of solid clean galena streaked with grey copper averaging \$300 per ton, while the remainder of the vein averages \$155 per ton. From a point 75 ft. north in this shaft a fine shoot of ore was encountered, which is continuous to date. The first carload of ore was shipped to the smelter at Trail from this shoot in the past month, and the net returns were \$73 per ton, or \$2,190 for the 30 tons. Another carload is about ready and will be shipped from New Hazelton in a short time. A drift run south on this same level shows the vein and ore of the same high-grade character as in the north drift. A drift was also run north from the 100-ft. level a distance of 90 ft., and shipping ore was continuous. A particularly fine shoot was encountered at a distance of 70 ft.

"No. 4 vein has been opened by surface cuts along the length of the vein and shows ore of equally good shipping grade as No. 3 vein.

"No. 5 Vein—Open cuts and surface stripping show much the same as Nos. 3 and 4. In spots the ore is of the highest value yet discovered. This will be opened by incline shaft this summer.

"The company owns eight adjoining claims (400 acres) and much of the surface has not been thoroughly prospected.

"All work to date has given good results. The high grade of the ore, continuity of the veins, and uniformity of the ore bodies have satisfied practical mining men of the district that this property will be a good producer and a profit-maker. The depth at present obtained—about 200 ft.—has proved that the ore bodies are larger and richer than at the surface, and such marked improvement at depth, as a general rule, insures the life of the ore.

"The total expenditure to date has been \$19,000; some 1,500 ft. of development has been done. In addition, much surface prospecting has been done, and cabins, bunkhouses, etc., have been built. The four Harris Bros. have given the best part of two and a half years to the property, beside having employe miners at wages. . . .

"To develop the mine further, by sinking another 100 ft. on the proved ore bodies it will be necessary to use machinery. To purchase this machinery and to defray the cost of sinking 100 ft. deeper, 100,000 shares of treasury stock are to be offered to the public. With the proposed work accomplished and a similar grade of ore at depth, the mine will be in a fair way toward becoming a dividend payer. The profits from the ore from the drifts and stopes will, from now on, be used to further develop Nos. 1, 2 and 5 veins. The net proceeds from each car should average \$2,000, taking the net profit from the first 30 tons as a basis. In view of the recent strike of high-grade ore, the average may run much higher. . . ."

TEN CARLOADS OF ORE LEAVE NEW HAZELTON FOR SMELTER

A New Hazelton despatch of the 29th inst. says:

Ten carloads of ore, each carrying thirty tons, left New Hazelton on Sunday morning's freight for Prince Rupert, and thence to the Trail smelter for treatment.

This ore was all taken from the Silver Standard mine, on Glen mountain, about seven miles from New Hazelton, and practically all of it came from the one development shaft on No. 2 vein.

The shaft on this vein is down to the 260 ft. level and the ore averages two and a half feet, and in one place widened out to nine feet of good, clean, high-grade ore.

Assays Are Good.

Assays on Silver Standard ore, taking the average of over a hundred samples, run nearly \$160 per ton. One sample assayed over \$800 per ton, but it does not indicate the real character of the ore and was not included in the general average. Silver-lead that will run \$150 to \$175 per ton is pretty good stuff to mess around in. It is estimated that all the ore included in the first shipment will run around \$150.

Banners, the full length of the cars, were ordered from Prince Rupert and were tacked onto the cars and sent

through to Trail. This is one of the biggest advertisements that the New Hazelton camp can have, and should do much to create a lot of interest in the local mines and prospects. A big crowd of New Hazelton people was down to see the first ore train pull out, and all along the line crowds witnessed the passage of the train.

Work Is Rapid.

Development work on the Silver Standard has been continued at great speed for the past two years and an immense amount of work has been accomplished. At the present time a long cross-cut tunnel is being driven from the lower level in the shaft on No. 2 vein to cut the No. 3 vein at a depth of several hundred feet. The No. 3 vein is the biggest on the property as yet discovered.

At any time the Silver Standard mine will produce several trainloads of ore without any further development. It is not likely, however, that much ore will be taken out for shipment until the tunnel is completed, and until the Hagwilget bridge is ready for use.

TO EXAMINE OWEN LAKE PROPERTY.

The Omineca Miner of the 21st inst. says:

Frank A. "Jumbo" Brown, who has been for several years prominently identified with mining development in this district, returned on Wednesday from a visit to Butte and the Coast cities, on business connected with the Owen Lake group. He will be followed next week by John A. Ryan, M.E., whose purpose it is to examine the Owen Lake group on behalf of the W. A. Clark interests. He will be accompanied by several other Butte mining men who are interested in various propositions in this district.

Mr. Brown, who has a bond on the Owen Lake property, is confident that the expert's examination and report will result in the consummation of the deal on which he has been working for some time, and that another group of Montana capitalists will enter this district. The taking over and development of this notable zinc property will mean a good deal to Omineca. If the deal is made, development work will be started immediately on a large scale.

While in Butte, Frank, who was engaged in the early development of the Rocher de Boule, offered the owners of the mine \$300,000 for the privilege of mining 20,000 tons of its ore, or at the rate of \$15 a ton royalty. This offer not being accepted, he proposed to drive a 750-foot tunnel on the property, taking his pay in the form of a royalty on the ore. Negotiations are still in progress.

If the Owen Lake deal is consummated, Frank will devote his attention to the opening up of the Como group.

A compressor is being installed near the Nighthawk mine, at the town of that name.

TRAINLOAD OF HAZELTON ORE FOR SMELTER.

The Omineca Miner of the 21st inst. says:

Speaking of the \$11 ore rate conceded by the G. T. P., General Agent McMaster said to The Miner that the new rate, which is now effective, is lower than the company had expected to give, since it had to cover wharfage and handling charges, as well as the C. P. R. rate from Vancouver to Trail. The case for the mine owners had been put so strongly, however, that the railway, wishing to assist in the development of the industry, had consented to the rate, which had been accepted by the miners. The first solid ore train, consisting of ten cars of Silver Standard ore, was ready to leave for Trail, Mr. McMaster said, and would be hauled to Prince Rupert within a day or two.

The general agent also intimated that an improved schedule providing for three trains a week, might be looked for in the near future.

TO DEVELOP MINE.

The immediate resumption of development work on the Silver Creek group of five claims is announced, says the Smithers Review of the 19th inst. This very promising property, located on Hudson Bay mountain, is under bond from Peter Schuffer, the original owner, to the Hudson Bay Mountain Mining Co., of which concern R. G. Steele, M. E., is superintendent. Last year's work demonstrated the value of the property, and arrangements for full development have been made. Mr. Steele is now on his way to Smithers, and will begin as soon as men and supplies can be taken to the claims. When the railway reaches Smithers the company will install machinery, and development on a large scale will be undertaken.

TESTING COALFIELD.

Mr. and Mrs. Thomas Jefferson, who returned to Telkwa last week, were warmly welcomed by their many friends, says the Omineca Miner of the 14th inst. They were accompanied from the coast by A. J. Beaudette, M.E., who will be associated with Mr. Jefferson in the drilling operations on the Morice river coal property of the Prince Rupert Coalfields, Ltd. A crew of about twenty men will be employed during the summer, and it is expected that prospecting operations will be completed and the extent of the deposits proven this season. F. M. Dockrill, who is interested in the property, will arrive in the course of a few days, with additional equipment.

The main tunnel of the Aufeas mine now extends 294 feet from the portal. According to the engineer's calculation the main vein should be struck at 310 feet, which will be reached in another week. The crosscut has now been driven thirty feet with continuous improvement in the values of the ores.—West Yale Review.

HEDLEY GOLD MINING CO. PAYS SECOND DIVIDEND THIS YEAR

The Hedley Gazette of the 19th inst. says:

For the second time in 1913, the Hedley Gold Mining Company is distributing profits from its mining and milling operations at the Nickel Plate property at Hedley. This is the second dividend of the year, and provides for the distribution of \$60,000, being the regular quarterly 3 per cent. and an additional bonus of 2 per cent. on the capital stock. The total paid in dividends by this company since they acquired the property in August 1909 is now \$981,000, and if the present rate is continued, the million mark will be passed by a goodly amount by the payment of one more dividend.

Development work has more than kept pace with the mining of the ore required to pay these dividends. The reserves have been steadily increased, until it is now estimated that fully 23,000 tons of broken ore are in the stopes, ready to be sent down the tram. With the better facilities that have now been provided by the No. 4 tunnel for the handling of ore, and the new Dickson incline shaft, which will soon be a factor in more economical hoisting, the cost of mining should be materially decreased, and the future of the Nickel Plate as a dividend payer is decidedly rosy.

The official announcement of the dividend is as follows:

Hedley Gold Mining Company
42 Broadway

New York, June 11, 1913.

A quarterly dividend of three per cent. (3%) and an additional dividend of two per cent. (2%) has this day been declared on the outstanding capital stock of this company, payable on Monday, June 30th, 1913, to stockholders of record at 3.00 o'clock p.m. on Monday, June 16th, 1913.

Transfer works will be closed on Monday, June 16th, 1913, at 3.00 p.m. and re-open on Tuesday, July 1st, 1913, at 10.00 o'clock a.m.

Hedley Gold Mining Company,
John D. Clarke, Secretary.

THE PRINCETON CEMENT PLANT.

E. P. Gaillac, formerly a business man of Chesaw, and now one of the prosperous coal barons of Princeton, spent last Friday night in Oroville on his way to his British Columbia coal possessions. Mr. Gaillac reports that the big cement plant at Princeton is ready to commence business and has contracted with his mine for the delivery of 100 tons of coal a month. This is one of the largest and most complete cement plants in the northwest, upward of half a million dollars having been spent before the institution was ready to turn a wheel. All of the buildings, and they are enormously big structures, are of stone and the machinery is the best and most complete that is manufactured

for the purpose. It is understood that the plant has orders ahead for all the cement it can turn out for the next twelve months.—Oroville Gazette.

PROGRESS AT CLIFTON.

The Hedley Gazette of the 19th inst. says:

Work is going along merrily at Clifton, which is the name of the new diamond drilling camp which is exploring the rugged mountain side and canyons to the east of Twenty-mile. Two drills have been at work for a few weeks, and it was the intention to start another on Friday last—that was Friday 13th, 1913—just to demonstrate the fact that the mining capabilities of the camp are proof against so colossal a hoodoo as Friday 13th. Mr. Beam has his exploration force well organized, with capable men in charge, and the most favorable results are looked for by the whole camp. For more reasons than one, Hedley takes a kindly interest in the present operations, and best wishes go out for the highest measure of success in the enterprise. A little over four years ago Mr. Beam first arrived on the scene and proved a friend in need, for it is well-known that the camp was then passing through a crisis, the possible outcome of which is not pleasant to contemplate, and had he not come at that particular time, to bring about a change which has shown up the folly of the course being pursued by those in charge, there would have been a very different tale to tell today.

Interesting Notes About the Mining Companies

Receipts and disbursements of the Standard Silver-Lead Mining Co., operating the Standard mine and concentrating mill near Silverton, Slocan Lake, for the calendar year 1912, were as follows: Receipts from 9,703 tons of silver-lead ore and concentrate shipped, \$680,000; from silver-zinc concentrate, \$41,340; from Government of Canada, bounty on lead produced, \$20,240; from boarding-house receipts, \$16,500; total \$758,080. Disbursements: For supplies, \$85,820; for labor, \$113,954; balance being net profit for year, \$558,306. Dividends paid to shareholders totalled \$425,000, leaving balance on hand, \$133,306. The directors and officers of the company for the current year are: W. J. C. Wakefield, president; John A. Finch, vice-president; Chas. Hussey, secretary-treasurer; Geo. A. Aylard, manager, and P. Clark.

At a special meeting held in Spokane, Washington, on June 7, stockholders in the Idaho-Continental Mining Co. ratified the contract agreement entered into by the management of the company with the International Smelting and Refining Co., under which a majority of the stock of the mining company is transferred to the smelting company as security for the sum of \$325,000, lent by the latter to provide for develop-

ment and equipment of the Idaho-Continental mine. The International Co. now has a majority representation on the directorate of the mining company by the election at the same meeting of William Wraith, general manager of the International; J. B. Whitehill, ore purchasing agent, also of Salt Lake, Utah, and Albert I. Goodell, of Spokane, local representative of the Ryan interests. The other directors are A. Klockmann, president, and Richard Schacht, secretary. Mr. Goodell (who is well known in Kootenay and Boundary districts, having been at Boundary Falls, Northport, and Marysville, East Kootenay), has been placed in charge of the Idaho-Continental mine as manager until the money borrowed from the smelting company shall have been repaid to it. The mine is in northern Idaho, distant about 26 miles from Porthill, from which place a wagon road, costing approximately \$65,000, is being constructed. Much development work has been done in the mine, and a 300-ton concentrator is well advanced toward completion, with most of the plant and machinery already received. The hydro-electric station, situated about half way between Porthill and the mine, will also be completed shortly. Shipment of the mine product to the railway at Porthill will be commenced as soon as the wagon road shall be finished. Porthill is on the Great Northern Railway, running from Kootenay lake and Creston, B. C., southward, across the International Boundary into Idaho.

The annual meeting of the McGillivray Creek Coal and Coke Co., operating a colliery at Carbondale, near Coleman, southwest Alberta, was held in Spokane, Washington, on June 5. Officers and directors were re-elected, as follows: Lorne A. Campbell, Rossland, B. C., president and general manager; James A. Nowell, Spokane, vice-president; W. E. Cullen, Spokane, secretary-treasurer. These, with P. M. Paine, Glencoe, Minnesota, and Fitzhugh Burns, St. Paul, Minnesota, constitute the directorate. Official reports presented at the meeting indicated satisfactory conditions at the mine, from which coal is being shipped regularly. Plans for increasing the output are under consideration.

Early in June directors and shareholders in the Rambler-Cariboo Mines, Ltd., from several cities in the State of Washington, proceeded to Kaslo to there attend the annual meeting of the company, convened for Tuesday, June 10. Before the meeting was held a visit was paid to the Rambler-Cariboo mine, in McGuigan basin, Slocan, and the concentrating mill on the middle fork of Carpenter creek, about three miles above Three Forks. The party included: Dr. John Armstrong, Tacoma; Mr. Frank Bowman, Seattle, and Dr. B. W. McPhee, Col. John Hunner and Mr. Alfred Coolidge, of Spokane. At the meeting, Messrs. Coolidge and A. M. McLaine and Dr. McPhee, all of Spokane; Dr. Armstrong and Rev. Father S. P. Hylebos, of Tacoma, and Dr. John Benson, of Colfax, were re-elected directors of the company. Mr. W. E. Zwicky, of Kaslo,

for many years manager of the company, tendered his resignation. Mr. John Rinta, also with the company a long while, as mine superintendent, is named as likely to succeed Mr. Zwicky as manager.

It is reported that a deal is pending for the acquiring of the Skyline property at Ainsworth by the Consolidated Mining & Smelting Co., says the Kaslo Kootenaiian. The Skyline is one of the first properties located in that camp and A. W. McCune, of Salt Lake City, is said to be interested in it.

At the annual general meeting of the Rio Mines, Ltd., held here a few days ago, the old board of directors was re-elected, says the Kaslo Kootenaiian of the 19th inst. The board will elect officers later.

At a meeting of the directors of the Rambler-Cariboo Mines, Ltd., held in Spokane after the shareholders meeting here, A. Coolidge was elected assistant treasurer and W. B. McPhee as treasurer, says the Kaslo Kootenaiian. John Rinta was chosen for the post of manager.

The Inland Coal and Coke company, operating in the Nicola, near Merritt, is now employing 200 men. The company owns 1,910 acres of coal lands and only began development work four years ago. No less than five seams of bituminous coal, ranging from 3 to 18 feet in thickness, have been partially developed and a large area of ground is still unprospected. Coal is now being extracted from a seam 12½ feet in thickness. The mine is free from explosive gases and thus far has never been the scene of an accident. The equipment is complete and includes a gravity tram. The superintendent is Andrew Bryden, formerly connected with the Dunsmuir collieries.

A press despatch from Ottawa gives the following information: "The P. Burns Coal Mines, Limited, with headquarters at Calgary, Alberta, has been granted incorporation. The authorized capital is \$1,000,000. The provisional directors are: Patrick Burns, Wilfred Cortel, F. S. Albright, Austin D. B. Winter and F. A. McAllister of Calgary. The company proposes to carry on mining operations and to deal in coal, iron, petroleum and gas-producing areas."

It has been reported from Spokane, Washington, that there have been tentative negotiations between the owners of the Chewelah Copper King mine and officials of the Granby Consolidated M. S. and P. Co. concerning the possible purchase of the property by the Granby Co. Nothing definite has yet resulted, however. The mine is in the State of Washington, north of Spokane, and as at present developed is not likely to be a large ore-producer, but its shipping ore is of excellent grade.

Professor Rees will make an extended investigation of the clays of the Similkameen this summer.

PERSONAL AND GENERAL

Movements and News of Prominent Mining Men.

Written for the B.C. Mining Exchange by E. Jacobs

Mr. W. L. Anderson, formerly of Porcupine, Ontario, has been appointed local manager for the Motherlode Sheep Creek Mining Co., with gold mine and stamp mill in Sheep Creek camp, Nelson mining division. Mr. Geo. E. Farish, of New York, resigned as general manager for the company several weeks ago; he left on a visit to New York, going via Montreal, at the end of June. Mr. John McMartin and associates, of Cobalt and Porcupine, Ont., are large shareholders in the Motherlode Co.

Mr. J. Berglund is in charge of diamond drilling operations for the British Columbia Copper Co., on a group of mineral claims, situated on Copper mountain, Similkameen, which that company is exploring under option of purchase. Four drills are being worked, and much development work is being done as well under the superintendence of Mr. Ed. Berryman.

Mr. D. W. Brunton, of Denver, Colo., U. S. A., recently paid a short visit to his son, Mr. Frederick K. Brunton, who is assistant superintendent at the British Columbia Copper Co.'s smelter at Greenwood, Boundary district.

Mr. Chas. H. Clapp, of the Geological Survey of Canada, is stated to have accepted a position on the Faculty of the School of Mines of the University of Arizona at Tucson, Arizona, U. S. A. He is well-known on Vancouver island, where he spent the field seasons of several recent years in geological work.

Hon. Louis Coderre, Dominion Minister of Mines, will, during August, make a tour through Western Canada, including the Yukon, to familiarize himself with mining conditions.

It has been announced in a press despatch that Hon. T. W. Crothers, Dominion Minister of Labor, plans to make a flying trip to the Pacific Coast in July, for the purpose of personally investigating matters in connection with the labor troubles that have caused a suspension of work at some of the coal mines on Vancouver island.

Mr. Clarence Cunningham, of Seattle, whose name has been prominently before the public in connection with coal lands in Alaska, was in the Similkameen district in the latter part of June, examining mineral claims in camps along the Similkameen and Tulameen rivers. In the same party was Mr. E. F. Fields, of Spokane, Washington, a mining engineer well known in that state.

Mr. E. P. Dudley, superintendent of construction at the Bunker Hill & Sullivan mines, Kellogg, Idaho, was married to Miss Mildred Jenkins in Vancouver on June 25. After the ceremony, Mr. and Mrs. Dudley left on a honeymoon

trip to southeast Alaska. Several years ago, Mr. Dudley, who is a nephew of Colonel Dudley, formerly United States consul in Vancouver, was employed at the Britannia mine, Howe Sound.

The Fernie correspondent of the Nelson Daily News states that Mr. Archibald Dick, master mechanic for the Crow's Nest Pass Coal Co., who has been appointed boiler inspector for the Province of Alberta, before his departure from Fernie was entertained in the Opera house by his fellow workers and presented with a valuable gold watch.

Dr. James Douglas, of New York City, has sent to the School of Mines, Kingston, Ontario, a cheque for \$25,000, for use in furthering the work of that progressive institution.

Mr. James Dunsmuir and others from the Coast recently visited the Coronation mine, on Cadwallader creek, Bridge river, Lillooet district, in which property they are largely interested. The 10-stamp mill on the property is now in operation and an excellent return from the ore being crushed is looked for.

Mr. J. C. Edwards, who for more than a year has been engaged in directing the development of the Treasure Mountain Silver Lead Co.'s mineral claims in Summit camp, Tulameen district, was a recent visitor to Spokane, Washington, in which city his company has its head office.

Mr. E. E. Emmons, of Vancouver, went up to Tulameen district in the latter part of June. He holds placer ground on Tulameen river.

Mr. James Finlay, formerly in charge of the Sullivan Group mines and smelting works, near Marysville, East Kootenay, is now manager of the Maple Leaf coal mine, situated between Frank and Bellevue, southeast Alberta, along the C. P. R. Co.'s Crow's Nest line.

Mr. S. S. Fowler, general manager for the New Canadian Metal Co., operating the Bluebell lead mine and concentrator at Riodel, Kootenay lake, is a member of the recently established Committee on Precious and Base Metals in connection with the American Institute of Mining Engineers. Another Canadian member is Dr. Willet G. Miller, of Toronto, provincial geologist for Ontario. This committee is actively engaged in securing and preparing papers and discussions for the 105th meeting of the Institute, to be held at Butte, Montana, beginning August 18, next.

Mr. J. F. Fredin, formerly of Toronto, has for some time been engaged in doing mining engineering work for the British Columbia Copper Co. on Copper mountain, near Princeton.

Mr. Albert I. Goodell, who was at one time manager of the Boundary Falls copper smeltery, and then of the Le Roi Mining Co.'s smelting works at Northport, Washington, has been appointed vice-president and general manager of the Idaho-Continental Mining Co. As representative of the International Smelting and Refining Co., which has advanced the Idaho-Continental Co. a large sum of money for development and equipment purposes, Mr. Goodell has been placed in charge of the mine and concentrating works, situated in northern Idaho and distant about 26 miles from Porthill, a town not far from the International Boundary line.

Mr. A. H. Gracey, of Nelson, was at Camborne at the end of May. He was formerly manager of the Eva gold mine and mill there when, several years ago, that property was being operated.

Mr. A. L. Gratsinger, of New York, well known in iron mining circles, is spending a vacation watching the development of the Dividend mineral claim, on Kruger mountain, Osoyoos mining division, which claim is one of the group owned by the Dividend-Lakeview Consolidated Gold Mining Co., in which the visitor and some of his New York friends are interested.

Mr. Jay P. Graves, vice-president and general manager of the Granby Consolidated Mining, Smelting and Power Co., accompanied by Mr. George W. Wooster, treasurer of the company, left Spokane late in June for Granby bay, Observatory Inlet, on a visit of inspection of the company's Hidden Creek mine and the new smelting works being erected and equipped in its vicinity. On the coast the party was to be joined by Mr. A. C. Flumerfelt, of Victoria, another of the directors, and Mr. F. M. Sylvester, assistant to Mr. Graves.

Mr. J. H. Green, superintendent for the Western Mining and Development Co., of Edmonton, Alberta, is putting in a 5-drill compressor at the company's mine in the Similkameen valley, about seven miles above Nighthawk, on the Oroville-Princeton railway. Several years ago a lot of high-grade ore was taken from a vein developed by a 500-ft. incline shaft, which ore was hauled in wagons to Coulee City, a distance of 70 miles, and thence shipped by railway to Denver, Colorado. The intention now is to drive an adit 4,200 ft. to cross-cut two or three veins and develop the property at greater depth.

Mr. Wilbur Greenough, of Whitehorse copper camp, southern Yukon, was in Seattle recently.

Mr. J. W. Grier, of New Denver, who does good service to the Slovan by publishing in the Slovan Record reliable information relative to mining in that district, was among the many of the A. F. and A. M. fraternity who were on the Coast this month. Major A. Megraw, proprietor of the Hedley Gazette, to whom mining men are frequently indebted for authentic news of the important operations of the Hedley Gold Mining Co., was also in attendance at the recently held big Masonic function.

Mr. John E. Smith, of Coal Creek, Crow's Nest Pass, has been elected president of District 18, United Mine Workers of America, defeating Mr. C. Stubbs, of Bellevue, Alberta, late district president.

Mr. James Humes, of the King Solomon mine, Cowichan district, Vancouver island, says the Pacific Mining Journal, has resigned the management of that property and become general superintendent of the Silver King Consolidated at Park City, Utah. Mr. H. G. Humes succeeds his father as manager of the King Solomon.

Mr. Jas. J. Johns was given a valedictory smoker and made the recipient of a valuable present of silver plate on the occasion of his leaving the Mother Lode mine, near Greenwood, to proceed to Sudbury, Ontario, to begin his new duties of mine superintendent for the Dominion Nickel Co. Mr. C. Hammerstadt is now foreman at the Mother Lode mine.

Mr. Frederic Keffer, geologist and mining engineer for the British Columbia Copper Co., recently examined a mine in Montana for that company. He was accompanied on his trip by Capt. Harry Johns, superintendent of the company's Kootenay mines.

Mr. Robert Keffer, son of Mr. Frederic Keffer of Greenwood, Boundary district, graduated as a mining engineer at the State College of Washington, Pullman, Washington, on June 12. For several years before he went to college, Robert Keffer was editor of the *Anaconda News*, one of the smallest newspapers published in the province, and the publication of which had to be discontinued when its proprietor entered upon his mining engineering course of study.

Prof. Arthur Lakes, of Denver, Colo., who has been for some time making his headquarters with his son at Ymir, arranged to leave New York on July 9 on a visit to England.

Mr. R. H. Ley, of Vancouver, representing the Giant Powder Co., was in the Similkameen district during the latter part of June.

Sir Richard McBride, Premier and Minister of Mines for British Columbia, will shortly pay another visit to England. He expects to leave for the Old Country about the end of August.

Mr. R. G. McConnell, of the Geological Survey of Canada, is expected to visit the Rainy Hollow district, in the northwestern part of Atlin mining division this summer, returning to Vancouver in August to meet the International Geological Congress excursion parties to arrive in the city about the 25th of that month.

Mr. W. C. McDougall, of Princeton, is directing the development of the United Empire coal mine, East Princeton, and getting out fuel for the cement works, at which operations were recently commenced there.

Mr. H. Mortimer-Lamb, of Montreal, Quebec, secretary of the Canadian Mining Institute, recently left Canada on a short visit to his family in England.

Mr. I. L. Merrill, president of the Hedley Gold Mining Co., has returned to Camden, Maine, from a visit to Europe.

Mr. J. C. Murray, for six years editor of the *Canadian Mining Journal*, Toronto, Ontario, has resigned that position, and has been succeeded by Mr. Reginald Hore, formerly geologist on the Michigan State Geological Survey, and instructor in geology at the Michigan College of Mines.

Mr. F. Noble was in Summit camp and over the divide to the Coquihalla, in the Hope mountains, during the month. He is stated to have been looking over the mineral claims in that comparatively undeveloped district in the interests of one of the large mining and smelting companies operating in the province.

Mr. Fred H. Oliver, of Spokane, formerly interested in mines in Boundary district and afterward in Toronto, Ontario, for some time, is now actively associated with the development of a new mining camp in Felix basin, about 30 miles from the railway at Coram, Montana.

Mr. J. L. Parker, formerly of Vancouver, but now of the Diamond City coal mine in Lethbridge district, southern Alberta, recently presided at a successful smoker held in the new club in Diamond City.

Mr. Wm. Pierce, of Republic, Washington, for years mine superintendent for the Republic Mines Corporation, is to be acting manager in charge of operations on property in which Canadians were at one time considerably interested.

Mr. Elias Rogers, of Toronto, Ontario, president of the Crow's Nest Pass Coal Co., was on the Pacific coast early in June.

Prof. Heinrich Ries, of Cornell, Ithaca, N. Y., will return to British Columbia in July to continue his investigations into the clay resources of Western Canada for the Mines Branch of the Canada Department of Mines. He will go to Similkameen district, after having first spent a week or two in Boundary district.

Mr. S. J. Schofield, of the Geological Survey of Canada, will this year do geological work along the eastern shore of Kootenay lake, from Crawford bay northward, commencing early in July.

Mr. B. N. Sharp, of Sharp & Irvine, Spokane, Washington, recently visited Princeton and Tulameen.

Mr. B. M. Snyder, at one time superintendent of the British Columbia Copper Co.'s smeltery at Greenwood, but now of Los Angeles, California, was recently examining mining property in Index district, Washington.

Mr. J. Trainor, who was at one time superintendent at the Sunset copper mine, in Boundary district, is now engaged in a similar capacity on the property of the Dividend-Lakeview Consolidated Gold Mining Co., on Kruger mountain, Osoyoos mining division.

Mr. W. C. Thomas, of Vancouver, has been in Lillooet district. He was at one time manager of the smelting works at Boundary Falls, Boundary district.

Mr. Wm. Thomlinson, of New Denver, has been engaged by the Provincial Mineralogist to make a collection of minerals from Slocan district, for exhibition purposes. The Provincial Department of Mines is stated to be preparing a number of sets representative of the province, these to be placed on exhibition in places where they will be most likely to attract attention to the varied nature and great value of the mineral resources of British Columbia.

Mr. E. E. Ward, superintendent of the Silver Hoard mine, in Ainsworth camp, has been proposed for membership in the American Institute of Mining Engineers.

Mr. E. Waterman, manager for the Princeton Coal and Land Co., operating a coal mine at Princeton, Similkameen, was in Spokane, Washington, last month.

Mr. Frederick R. Weekes, resident mining engineer at the British Columbia Copper Co.'s camp on Copper mountain, Similkameen, recently spent a week's vacation visiting some of the West Kootenay lakes and at Banff.

Mr. Clive White, son of Mr. Oscar V. White, the well-known superintendent of the Slocan Star mine, has been appointed superintendent of the Idaho-Alamo mines, also in Slocan district.

Mr. E. Williamson has received returns from two cars of silver lead ore he sent to the smelter. It is stated the ore netted him about \$50 a ton. He has been working alone on his Sunny-side claim, on James creek, which flows into Kettle river above Rock creek, in Greenwood mining division.

Mr. W. E. Zwicky, of Kaslo, whose resignation as manager for the Rambler-Cariboo Mines, Ltd., was recently announced, has been actively engaged in deep-level development work in Slocan district for nine years or more. It was on his strong recommendation that the work of driving the 4,500 ft. cross-cut adit at the Rambler-Cariboo mine, in McGuigan basin, was undertaken in 1904, and results have amply proved the great value of the services he rendered his company and the district by his foresight and later successful engineering.

From the lately issued 1912 volume of the Transactions of the American Institute of Mining Engineers, it is learned that the following named mining and metallurgical men, resident in Canada, accepted membership in the Institute during that year: A. E. Barlow, Montreal, Quebec; W. L. Bell, Greenwood, B. C.; Howells Frechette, Ottawa, Ontario; Geo. F. Hendricks, Cobalt, Ontario; J. O. E. Holden, Princeton, B. C.; W. E. Hurd, Haileybury, Ontario; H. W. Marsh, Whitehorse, Yukon; Geo. H. Morse, Pochontas, Alberta; Chas. A. Randell, Cobalt, Ontario; C. E. Rodgers, Sheep Creek, B. C.; J. W. Strohecker, Rossland, B. C., and M. Van Sicklen, Turtle Creek Siding, N. B.

OBITUARY

Several months ago, Samuel E. Belt, who was at Greenwood, Boundary district, for about five years, died in French Guiana, but few of those who knew him in this province heard of his death until quite recently. The late Mr. Belt, who was only about 34 years of age, was born in Illinois. While still a young lad he removed, with his parents, from that state to Spokane, Washington, in the public schools of which city he was educated, graduating from the Spokane High School, and later studying chemistry and assaying with E. B. Van Asdel at his laboratory in Spokane. After two years spent in prospecting and mining, he became assistant assayer, in 1903, at the British Columbia Copper Co.'s smelting works at Greenwood. Later he became head assayer, and afterward metallurgist. In 1908 or 1909, he left that company's employ, and joined the staff of the Arizona United Mining Co. as assayer, after leaving which position he went to French Guiana in the capacity of superintendent of a mine in that country. For two years he was engaged in mining there, but eventually he was taken seriously ill. Becoming convalescent, he did not think it necessary to leave the country, but his remaining cost him his life, for sickness again attacked him and death followed, this occurring at Apponague, French Guiana, early in the present year. The late Mr. Belt was a general favorite with all who knew him; he was of a remarkably cheerful disposition and very optimistic temperament. At Greenwood he and his wife—whom he married about four years before his death—had many warm friends, and they much regretted the removal from the district of Mr. and Mrs. Belt, who were active in most things that made for the advancement of the community. Besides his widow, there were left to mourn his untimely death his parents and a brother and sister.

W. T. Smith, a pioneer of Boundary Creek district, died at New Westminster on May 31. He went to Boundary creek in the late eighties, and made his camp at Boundary Falls. He worked quartz claims in the vicinity for years, and put in, immediately below the falls, a small steam-operated plant, designed to crush the quartz, but no commercial results were obtained. He represented Farrell & Midgeon, of the Parrot works, Butte, Montana, and superintended the development work done by them on the Emma, Stemwinder and other claims that have since been ore producers. After the sale of those properties he worked others in the district. Later,

he went to Cobalt, Ontario. During recent years he did development work, under option of purchase, on various properties—among others, a copper property at Sooke, Vancouver island, and latterly a gold property in Bridge River camp, Lillooet district. At times he was in comfortable circumstances financially and, like many another pioneer, was very generous with his money while it lasted. He was widely known in southern British Columbia and northern Washington, and his death is much regretted by many old-time friends in those districts.

Gilbert Malcolm Sproat, who died recently at Victoria, was one of the most widely-known of the pioneers of the province. A press despatch gives the following information relative to him: Mr. Sproat was a graduate, with honors, of King's College, London, before leaving England for Canada in 1860. He settled in British Columbia, and was coroner and magistrate in Alberni district, V. I., for some years. There he wrote scenes and studies of savage life, which went through a number of editions. He was member for Vancouver island in the local Parliament of that period. In 1865 he returned to England. In 1872 he was appointed Agent-General in England for the province, and was the first to fill that position; his appointment was made by the first British Columbia Government after Confederation. In 1885 he removed to Kootenay, and took up his residence where Nelson, the largest town in West Kootenay, now stands. The same year he was appointed stipendiary magistrate and gold commissioner for Kootenay. His decisions as gold commissioner gained for him a reputation as a just and painstaking official. He has been called the founder of Nelson, the founder of Revelstoke and the father of Kootenay. Revelstoke was first called Farwell by Mr. Sproat after his friend, A. S. Farwell, formerly surveyor-general for British Columbia, who laid out the town. The name was afterward changed to Revelstoke by the Canadian Pacific Railway Co. In 1890 Mr. Sproat returned to Victoria, where he has since lived a retired life. He leaves one son in Victoria, and a brother and two sisters in Scotland, and much property is left to his heirs. To the foregoing may be added that his official reports as gold commissioner, made 20 to 25 years ago, were comprehensive and gave evidence of his appreciation of the fact that an important future was in store for the mining industry of the Kootenay district, concerning which he was usually well informed.

O. V. White, superintendent of the Star mines at Sandon, was in town recently. Three feet of clean ore was encountered in the drift from the up-

raise at a depth of 700 feet on the vein. A drift is now being run at 800 feet. Drifts will also be run at 900 and 1,000 feet.—Slocan Record.

HONORS FOR B. C. SURVEYOR.

By a recent vote of, and election by, Dominion land surveyors practicing in British Columbia and members of the Dominion Land Surveyors' Association at Ottawa, J. H. Brownlee, of the firm of Brownlee, Nash & Davidson, Vancouver, was chosen by his brother surveyors as second vice-president of the association, to represent this province.

It will be incumbent on Mr. Brownlee to attend the annual meeting of the association at Ottawa in January next, as the representative of British Columbia on the Dominion Land Surveyors' Board.

This move is in harmony with the many recent reforms brought about by the Provincial Minister of Lands between the two governments at Victoria and Ottawa, and for the betterment of land control within the railway belt.

It may be noted that the Hon. Mr. Ross has also brought about the control by this province of water rights and water records within the Dominion railway belt, which is a help to surveyors and engineers.

In view of the above facts we are of the opinion that the present appointment is a matter for congratulation to all parties concerned, the more so because the high reputation worthily enjoyed by Mr. Brownlee among the members of his profession is a guarantee that he will fulfil his duties on the Dominion Land Surveyors' Board to the credit of this province and the Dominion and to the satisfaction of his brother Dominion land surveyors practicing in British Columbia.

It may not be generally known that Mr. J. H. Brownlee has for many years been correspondent member in British Columbia of the American Geographical Society in New York. This honor was won by Mr. Brownlee when a school-boy at the Old Dutch School in New York city, for meritorious outline and original map work that came to the notice of the Geographical Society about thirty years ago. Mr. Brownlee's hosts of old friends throughout the Canadian Northwest will join us in congratulating him upon his appointment.

KOOTENAY ORE PRODUCTION.

The Nelson Daily News of the 30th inst. says:

Ore production in the Kootenay and Boundary districts for last week and the present year to date is:

Rossland.

	Week.	Year.
Centre Star	2,750	7,956
Le Roi	1,539	29,083
Le Roi No. 2	466	10,809
Inland Empire, milled...	275	1,375
Le Roi No. 2, milled....	350	9,110
Other mines		199
Total	5,380	122,532

East Kootenay.

Sullivan	408	17,481
Other mines		757
Total	408	18,238

Lardeau.

Other mines	233	
Slocan and Ainsworth.		
Van-Roi, milled	725	17,078
Standard, milled	500	12,500
Rambler-Cariboo, milled..	300	6,100
Bluebell, milled	1,200	31,000
Richmond-Eureka	31	386
Standard	410	7,289
Eastmount	30	180
Rambler-Cariboo	65	1,574
Van-Roi	31	491
Utica	83	324
Idaho-Alamo	31	93
Other mines		7,710
Total	3,406	84,925

Nelson.

Queen, milled	350	6,475
Mother Lode, milled ...	500	8,500
Second Relief, milled ..	200	4,400
Queen Victoria	576	13,119
Other mines		8,357
Total	1,626	40,851

Consolidated Co.'s Receipts.

Trail, B. C.

Ben Hur	595	6,393
No. 7	148	3,666
Hope	56	306
Giant California	43	72
Richmond-Eureka	31	386
Standard	410	7,289
Eastmount	30	180
Rambler-Cariboo	65	1,574
Van-Roi	31	491
Utica	83	324
Idaho-Alamo	31	93
Centre Star	2,750	7,956
Le Roi	1,539	29,083
Le Roi No. 2	466	10,809
Sullivan	408	17,481
Other mines		17,387
Total	6,866	167,400

Boundary.

Granby	24,581	612,436
Mother Lode	5,184	162,092
Rawhide	5,182	129,242
Napoleon	385	17,124
Unnamed	220	3,715
Nickel Plate, milled	1,500	39,000
Ben Hur	595	6,393
No. 7	148	3,666
Hope	56	306
Giant California	43	72
Other mines		6,818
Total	37,874	980,864

B. C. Copper Co.'s Receipts.

Greenwood, B. C.

Mother Lode	5,184	162,092
Rawhide	5,182	129,242
Napoleon	385	17,124
Unnamed	220	3,715
Queen Victoria	576	13,119
Total	11,547	325,292

Granby Smelter Receipts.

Grand Forks, B. C.

Granby	24,581	612,436
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The warmer weather in the Cariboo country has made possible the renewal of operations in the placer mining districts situated there.

The geological survey has issued a statement of the proposed work for the summer. Of interest to British Columbia is the announcement that a party under D. D. Cairns will be employed in a real mapping (geological) of the White River copper district, examination and immediate report on the copper deposits of Valdez Island and reconnaissance of the placer area southwest of Teslin Lake.

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VANCOUVER, B. C., JUNE, 1913.

EDITORIAL.

The action of the Senate of the Dominion of Canada in practically killing the Borden Navy Bill has made the question of the reconstruction of Canada's Second Chamber a very live issue. Their action was a foregone conclusion, and there is no intention here of discussing the deplorable lack of generalship—to use no stronger expression—which allowed a matter of national importance and honor to fall under the axe of political partizanship. But the situation, in so far that it has damaged Canadian credit at a critical period and left this rich Dominion to continue for some time longer in the humiliating position of a "remittance man," invites a few words of criticism regarding the body responsible for the disgrace. With the principle of a Second Chamber most thinking men are in full accord. It was recognized as a necessary check upon the evils of a headstrong democracy by the founders of the United States—the first English-speaking republic of its kind to be formed—and has, on many notable occasions, proved its usefulness. But it was in no sense the intention of

those who originally made the Second Chamber an integral part of democratic institutions that it should become a sort of Old Man's Home, a salaried refuge for an infelicitous aggregation of incompetent moribunds, faithful rather to the party whose hand fed them this bone to gnaw in their old age than to the interests of their country, which they are sworn to uphold. It cannot be denied that the present Dominion Senate was—to use a mining term—industriously "salted" by the Liberal party during its day of power with a view to its use in checking the will of the people of Canada in just such an eventuality as that which has now occurred. The bulk of the Dominion Senate today is composed of men who were placed there as a reward for services rendered to their party, rather than for personal worth to the country, and most of them are men who have repeatedly been rejected by the electorate at the polls—or who have good reasons for not daring to face that electorate. The only Second Chamber worth considering is one whose members are above the "pull" of partizan politics, and who are men of proved integrity and high standing. It is notorious that Canada has never been able to secure this sort of body, and the time has now come—to quote the favorite expression of Liberals towards the British House of Lords (an infinitely more upright and honorable Second Chamber)—to "mend it or end it."

Elsewhere in this issue appears the report of the annual meeting of the B. C. Oil & Coal Development Co., Ltd. We commend it to the attention of our readers, for part of it contains a remarkable record of difficulties overcome and hardships patiently endured—a more than usually interesting description of the trials which confront those who develop to the service of man the great natural resources of this country. It is pleasant to know that from all present indications the company's contest with Nature's obstacles will not have been in vain. The writer had a very interesting conversation with a prominent oil man, Mr. G. R. Morrison, who had just returned from the oil-field a few days ago, and was shown samples of the oil sand in which they are now working. The sand is so permeated with oil that it is almost semi-liquid in condition, and its presence in quantity on the company's holdings is an excellent augury for the success of the undertaking. The favorable outcome of these operations will be awaited with eagerness by more than those immediately concerned, for the bringing of these oil lands in British Columbia and Alberta

to a basis of practical production will be the most important event in the history of the West since the days of the gold excitement in Cariboo.

Between now and the middle of autumn the province of British Columbia will be visited by several of the members of the Dominion Cabinet. Boards of Trade, and other public bodies at the various centres which these gentlemen will visit will have many matters of importance concerned with the development of the West to bring under their notice. Among the subjects most fitting to be so referred to is, it seems to us, the question of the creation of a portfolio of mines. Not that any one of the Cabinet ministers coming here can himself decide on or even take a leading part in advocating such a portfolio. There is an etiquette and a due formality in these matters, and the Hon. Mr. Borden, as head of the Government, has the supreme decision in a move of this nature. But this is not to say that Mr. Borden's colleagues should not be supplied with every information that may familiarize them with the enormous and increasing growth of the mining industry upon which the demand for a portfolio of mines is based. In British Columbia the annual value of the output of the mines is, and has been for years past, from fifty to one hundred per cent. ahead of the production value of any other of the province's resources. And British Columbia occupies the second place in the Dominion of Canada as a mining country, being only surpassed by Ontario on account of the big silver output of the latter province. It is most appropriate, then, that the strongest representations for the new portfolio should come from British Columbia, and that her public bodies, with the strongest backing from the provincial press and public opinion, should break the ground and sow the seed by losing no opportunity, in season and out of season, of urging upon every member of the Dominion Cabinet the claims of the mining industry to adequate representation therein.

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LATEST METAL MARKETS.

(From Chicago Mining and Engineering World.)

Silver—According to Pixley & Abell the exports of silver from London to India are ahead of those for last year. The total shipments to June 12 were £3,423,000, compared with £2,999,800 for corresponding period last year. Monsoon rains hitherto favorable, will determine to what extent these demands may continue. Harvests, while good, are less abundant than in 1912.

Quotations at New York for bar silver per fine ounce and at London per standard ounce, for the week ending June 24 were as follows:

	New York		London	
	Cents	Pence	Cents	Pence
June 18	63½	27	68½	26
June 19	63½	27	68½	26
June 20	63½	27	68½	26
June 21	63½	27	68½	26
June 22	63½	27	68½	26
June 23	63½	27	68½	26
June 24	63½	27	68½	26

MONTHLY AVERAGE PRICES OF SILVER

	New York			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	63½	61½	62.928	56.259
February	62½	58½	61.625	59.043
March	59½	56½	57.969	58.360
April	60½	57½	59.540	59.265
May	60½	59½	60.360	60.754
June	...	...	...	61.265
July	...	...	...	60.615
August	...	...	...	61.600
September	...	...	...	63.364
October	...	...	...	63.504
November	...	...	...	62.750
December	...	...	...	63.390
Year	...	...	...	60.837

Copper—The copper market was depressed last week, due in part to continued reports of the existence of large hidden stocks of the metal. There was a slight reaction from the depression for a day or so, but both domestic and foreign consumers confined purchases of electrolytic copper to actual needs, which were small, as the majority of the large consumers have been receiving copper recently in excess of melting requirements. The result of the fluctuations in American electrolytic last week was a break of 1-2 cent a pound net, and at the close the market was still heavy and weak. In Europe American electrolytic dropped from £69 5s. to £67 10s. and was nominally quotable between £67 10s. and £68 at the close of the week. This is equivalent to about 14 1-2 f.o.b. New York. Exports continue heavy at the rate of nearly 1000 tons a day since the first of June, indicating a further transfer to European warehouses, which takes copper out of the visible supply in the way statistics are kept by the selling interests. The exports from the United States last week were 9561 tons, and since June 1 foreign shipments have been 20,113 tons.

Standard copper at New York was dull, heavy, weak and lower, the decline ranging from 1-2 to 5-8 cents per pound, with prices nominally quotable at 14 cents. for June, July and August, and 14 1-8 to 14 1-4 cents for spot at the close of the week.

Quotations for copper per pound at New York and per long ton of 2240 lbs. at London for the week ending June 24 were as follows:

	Lake	Elec	Cast	Standard
	London	London	London	London
June 18	18.15½-15	15-14½	15-14½	£66 0 0
June 19	19.15½-15	15-14½	15-14½	64 15 0
June 20	20.15½-16	16-14½	15-14½	63 5 0
June 21	21.15½-15	15-14½	15-14½	63 5 0
June 22	22.15½-14½	15-14½	14½-14½	62 17 6
June 23	23.15½-14½	15-14½	14½-14½	63 15 0

MONTHLY AVERAGE PRICES OF COPPER

	New York—Lake Superior			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	18	16½	17.116	14.526
February	16½	15½	15	14.606
March	16½	15½	15.306	14.911
April	16½	15½	15.731	16.092
May	16	15½	16.966	16.391
June	...	...	...	17.612
July	...	...	...	17.536
August	...	...	...	17.694
September	...	...	...	17.724
October	...	...	...	17.753
November	...	...	...	17.760
December	...	...	...	17.760
Year	...	...	...	16.695

	New York—Electrolytic.			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	17½	16½	16.983	14.425
February	16½	15	15.717	14.435
March	16½	15½	15.065	14.853
April	16½	15½	15.620	16.003
May	16	15½	15.896	16.326
June	...	...	...	17.505
July	...	...	...	17.418
August	...	...	...	17.694
September	...	...	...	17.706
October	...	...	...	17.745
November	...	...	...	17.750
December	...	...	...	17.750
Year	...	...	...	16.634

Tin—Tin prices last week continued to fluctuate widely with downward tendency, the market both at New York and abroad lacking support. The causes for this condition are given as unsettled industrial conditions, unfavorable political features, and a close money market, as far as speculators were concerned. The break in the London market for the week was £10 15s. and a further drop was reported on Saturday. The New York market was little more than a reflex of operations at London and the break in prices here was from 2 1-4 to 2 3-8 cents per pound. Domestic consumers mainly purchased only small lots for nearby shipments, but there were some speculative transactions in June, July and August positions in 25 ton lots.

Quotations for tin at New York and at London for the week ending June 24 were as follows:

	New York	London
June 18	45.26-44.85	£205 5 0-205 0 0
June 19	45.15-44.85	205 0 0-204 15 9
June 20	43.75-43.40	198 10 0-198 10 0
June 21	44.25-43.30	198 10 0-198 10 0
June 22	42.35-42.25	193 15 0-193 0 0
June 23	43.75-43.30	198 0 0-197 10 0

MONTHLY AVERAGE PRICES OF TIN

	NEW YORK.			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	51.25	49.50	50.414	43.275
February	50.30	47.30	48.738	43.346
March	48.50	45.62½	46.844	42.690
April	50.25	47.37½	49.076	43.970
May	50.75	47.10	49.15	46.055
June	...	...	...	48.046
July	...	...	...	44.665
August	...	...	...	45.849
September	...	...	...	49.222
October	...	...	...	50.073
November	...	...	...	49.869
December	...	...	...	49.899
Year	...	...	...	46.330

Lead—Lead advanced about 1-8 cent last week, at New York, on spot and 10 to 15 points on futures. On call at the New York Metal Exchange 4.35 cents was bid for spot and June, 4 3-8 cents for July and 4.40 cents for Au-

gust, with offerings of June at 4 3-8 cents and July and August at 4 1-2 on Friday. For delivery East St. Louis 4 1-4 cents was bid for spot, June, July and August, with 4.35 cents asked for each position; 50,000 lbs. June sold at 4.35 cents and 50,000 lbs. July at 4 3-8 cents on Friday.

Quotations for lead at New York and at London for the week ending June 24 were as follows:

	New York		London	
	Cts. per lb.	Per Ton	Cts. per lb.	Per Ton
June 18	4.35-4.30	£21 10 6	4.35-4.25	21 10 0
June 19	4.35-4.25	21 10 0	4.35-4.25	21 10 0
June 20	4.35-4.25	21 10 0	4.35-4.25	21 10 0
June 21	4.35-4.25	21 10 0	4.35-4.25	21 10 0
June 22	4.35-4.25	21 10 0	4.35-4.25	21 10 0
June 23	4.35-4.25	21 10 0	4.35-4.25	21 10 0
June 24	4.35-4.25	21 10 0	4.35-4.25	21 10 0

MONTHLY AVERAGE PRICES OF LEAD

	New York			
	1913	1913	1913	1912
Month	High	Low	Avg.	Avg.
January	4.37½	4.26	4.301	4.425
February	4.35	4.25	4.30	4.068
March	4.40	4.25	4.340	4.167
April	4.45	4.20	4.381	4.213
May	4.55	4.25	4.418	4.164
June	...	...	...	4.396
July	...	...	...	4.669
August	...	...	...	4.681
September	...	...	...	5.071
October	...	...	...	5.088
November	...	...	...	4.633
December	...	...	...	4.300
Year	...	...	...	4.482

Spelter—Spelter was stronger and 2 1-2 to 5 points higher last week. On call at the New York Metal Exchange spot, June and July offered at 5.15 cents, with 5.05 cents bid. August and September offered at 5.20 cents, with 5.10 cents bid for each position on Friday. For delivery East St. Louis spot, June and July offered at 5 cents, with 4.90 cents. bid for all positions from spot to September, inclusive, on Friday.

London declined 17s. 6d. net during the week, closing at £21 15s for G. M. B., against £22 12s. 6d. on the preceding Friday.

Quotations for spelter at New York and at London for the week ending June 24 were as follows:

	New York		London	
	Cts. per lb.	Per Ton	Cts. per lb.	Per Ton
June 18	5.16-5.05	£22 5 0	5.15-5.05	22 5 0
June 19	5.15-5.05	22 5 0	5.15-5.05	22 5 0
June 20	5.15-5.05	21 15 0	5.15-5.05	21 15 0
June 21	5.15-5.05	21 15 0	5.15-5.05	21 15 0
June 22	5.15-5.05	21 0 0	5.15-5.05	21 0 0
June 23	5.15-5.05	21 0 0	5.15-5.05	21 0 0

MONTHLY AVERAGE PRICES OF SVELTER

	New York				London.			
	1913	1913	1913	1912	1913	1913	1913	1912
Month.	High	Low	Avg.	Avg.	High	Low	Avg.	Avg.
Jan.	7.40	6.40	7.192	6.505	26.115	26.721	26.115	26.721
Feb.	6.80	6.15	6.405	6.541	25.385	26.457	25.385	26.457
Mar.	6.45	5.70	6.222	6.817	24.130	26.035	24.130	26.035
Apr.	5.95	5.45	5.712	6.799	25.305	26.648	25.305	26.648
May	5.55	6.25	5.477	6.85	24.386	26.520	24.386	26.520
June	...	...	...	7.011	...	26.765	...	26.765
July	...	...	...	7.229	...	26.173	...	26.173
Aug.	...	...	...	7.042	...	26.424	...	26.424
Sept.	...	...	...	7.653	...	27.067	...	27.067
Oct.	...	...	...	7.650	...	27.551	...	27.551
Nov.	...	...	...	7.429	...	26.766	...	26.766
Dec.	...	...	...	7.331	...	26.880	...	26.880
Year	...	...	...	7.053	...	26.817	...	26.817

Seattle has succeeded in securing from Washington the removal of the arbitrary charge of 61.25 per thousand on gold purchased at the assay office there. It is claimed that this concession places Seattle on the same basis as Vancouver. Officials at Vancouver say Vancouver assay office still affords the best market for gold on the continent.

Coast and Island Mining

Granby Co. Buys Claims on Portland Canal—Excellent Progress on Work of Portland Canal Tunnels, Ltd.—Permanent Exhibit of Portland Canal Ores in Vancouver Chamber of Mines—Coast Mining Prospects Very Good—General News of the Mines.

GRANBY CONSOLIDATED BUYS CLAIMS ON PORTLAND CANAL

The Portland Canal Miner of the 14th inst. says:

The four claims owned by William Moul, Jack Hartley and associates, four miles above Swamp Point, Portland Canal, have been sold to the Granby Consolidated Mining & Smelting Company. The locations were staked several years ago, and the owners have developed same by a series of open cuts, prospect tunnels and shafts. The consideration is unstated. The group has a 25-foot ledge of ore carrying a fair percentage in copper values besides a large lime dyke, and it is believed the property was acquired by the Granby Company for its value as a fluxing proposition. Messrs. Moul and Hartley are both in Prince Rupert, where the deal was consummated last week. Mr. Moul, after a trip of investigation up the Observatory Inlet, will shortly reach Stewart. He has been in the employ of the purchasing company for many months.

GOOD PROGRESS ON PORTLAND CANAL TUNNEL.

For the month of June the tunnel was driven a distance of 218 feet, making a total distance of 1,485 feet. During the greater part of the month the rock was exceedingly hard and difficult for drilling. The last feet show indications of a change.

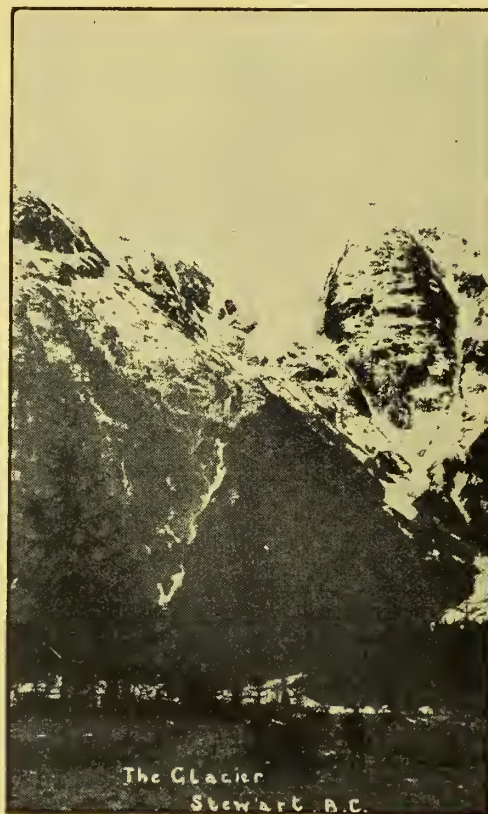
PORTLAND CANAL HAS PERMANENT ORE EXHIBIT WITH VANCOUVER CHAMBER OF MINES.

The first district to respond to the invitation of the Vancouver Chamber of Mines to instal a permanent ore exhibit in the chamber's new headquarters on Granville Street was that of the Portland Canal Mining Division. There has now been arranged in a special cabinet a most creditable display representing many of the leading properties from the several camps included in this division. Among the samples on exhibit are the following: Hercules, Indian, Riverside, Stewart, Fnr. Group, Glacier Creek, Main Reef, Northern Terminus, Portland Canal, Mohawk, Montana, Copper Queen, Clivver, Bonanza, Ben Bolt, Lakeview, Cascade Falls, Old Chum, Kansas, Red Cliff, L. L. & H., Silver Tip, Ruth & Francis, O. K., Columbia & Evening Sun, Lookout & Salmon Bear River. The work undertaken by the special mining

committee of the Stewart Citizens' Association, headed by T. J. Vaughan-Rhys, M. E., is only yet in its initial stage, as it is the intention of this committee to collect, classify and distribute similar ore exhibits in such places as Victoria, Prince Rupert, Toronto, etc. Every effort is to be made to attract attention to the mining possibilities of this divson of the great Skeena rding, and the committee has a laudable ambition to capture the grand district prize for ores at the September exhibition of

Copper Queen, Cascade Falls, Indian and Mohawk.

As other claims or new discoveries are opened up, owners are particularly requested to bring in specimens, which may be left at the office of Chairman Vaughan-Rhys to be included in future collections to be sent to the outside. The work undertaken the committee desires to be of a permanent character, and as every member is giving his services gratis, as also the several transfer companies who will pack samples free



The Glacier, Stewart, Portland Canal, B.C.

the Northern British Columbia Agricultural and Industrial Association, to be held in Prince Rupert in September.

There are, however, a number of properties from which ore samples have not yet been secured, and the committee would appreciate owners bringing same in at the earliest possible moment. It is also desired that owners furnish assay certificates of ores from the under-mentioned claims so that same may be printed on the cards accompanying the several specimens: O. K., Finn Group, Kansas, Hercules, Salmon-Bear River,

of charge, it only remains with the prospector and claim owner to do his share towards making the work the success expected. Nothing will serve the community or the district as a whole, to greater advantage than the installation of permanent ore exhibits in those centres from which capital may be derived for legitimate mining purposes.

Pete Schufer and Matt. Little are preparing to develop their mineral claims on Hudson Bay mountain, near Smithers.

KEYSTONE DRILL TO EXPLORE PORTLAND CANAL PLACERS.

The Portland Canal Miner of the 7th inst. says:—

J. C. McLaren, M.E., who was in camp last week making an examination of the placer holdings of a local syndicate, is in Vancouver arranging for the shipment of a Keystone drill with which to start the systematic exploration of a group of ten placer claims, starting from the mouth of Glacier creek and following up the Bear River valley beyond Bitter creek.

RECORD TOTAL OF LICENSES FOR PORTLAND CANAL.

For the month of May there were issued by Mining Recorder John Conway 110 company and free miners' licenses, says the Portland Canal Miner of the 7th inst. This constitutes a record, and surpasses that for the same period of last season.

PLEASED WITH LILLOOET PRO- PERTIES.

The Vancouver Province of the 24th inst. says:

Mr. Adolphus Williams, formerly city police magistrate, returned on Saturday from a trip to Lillooet. Mr. Williams went primarily to visit some mining properties owned outright by Messrs. A. and P. Ferguson and himself. The principal work that they are doing is on the Pioneer mine, which adjoins the Cornation, owned by ex-Lieut.-Governor James Dunsmuir. The Pioneer was bought from Mr. Arthur Noel, who is a pioneer of what was for years known as the Bridge River district. These mines are in the Lillooet district, to be geographically correct, and are on the banks of Cadwallader Creek. The same vein runs through the Pioneer and the Coronation, and both of these mines are now being worked by the owners. On the Coronation, since a visit recently paid by Mr. Dunsmuir to the district, the stamp mill has been working twenty-four hours a day. On the Pioneer there are two shafts working along the vein and a tunnel is being run to crosscut it. The Pioneer will be able to have all the water power it requires from a proposed 600-foot ditch from the Cadwallader.

A stamp mill is to be put up on the Pioneer at once, says Mr. Williams, as the quartz now being taken out fully justifies it.

SURVEY OF BRIDGE RIVER DISTRICT.

The Lillooet Prospector of the 27th inst. says:—

An excellent start has been made on the work of the Dominion geological survey at Bridge river, says Mr. E. E. Freeland, who is in charge of the party. Mr. Freeland was in town this week.

The party consists of Mr. Freeland, three students from Ottawa, cook and packers. Its purpose is to make a topographical survey of an area of

about 300 or 400 square miles, south of Groundhog mountain, embracing the Coronation and El Dorado, running south as far as Jones' ranch.

This topographical work is intended to serve as a basis for a complete and comprehensive geological survey of the entire area, which will be commenced next year, or the following year, by Mr. Bateman of the Dominion geological department.

At the conclusion of this year's work it is the intention of the department to issue a topographical map of the area covered. This will be followed by the publication of a combined geological and topographical map when Mr. Bateman has completed his examination of the country.

Mr. Freeland's party will remain at Bridge river until October.

GRANBY CO. LEASES MT. ANDREW MINE.

A news item from Ketchikan, Alaska, is as follows: "E. E. Campbell, of Phoenix, B. C., and A. E. Bryden, another mining engineer, both representing the Granby Consolidated M. S. and P. Co., have been here in company with W. J. Rogers, secretary of the Mt. Andrew, and there seems to be a strong likelihood that they will take a bond on the Mt. Andrew mine, on Prince of Wales Island, to work it in conjunction with the Hidden Creek mines and smelting works at Granby Bay, Observatory Inlet." It will be remembered that the Britannia Mining and Smelting Co. several years ago operated the Mt. Andrew mine, using its ore to flux the siliceous ore of the Britannia.

On June 21 The Engineering and Mining Journal, New York, stated that "the Granby Consolidated Co. has secured a two-years' lease on the Mount Andrew copper mine, which was located more than 15 years ago by the late Samuel Lichtenstadter, of Seattle, and is one of the best-known copper properties of the North. More than \$250,000 is to be expended, according to the terms of the lease, in the development of the property. The work of gathering men and materials will be begun at once, and within a year the mine will be shipping. The lease was made with an option to purchase at the end of two years."

ENGINEER GROUP TO BE LARGELY DEVELOPED.

The White Horse (Y. T.) Star of the 13th inst. says:

Captain James Alexander, principal owner and general manager of the Engineer group of gold quartz mines located between Carcross and Atlin, arrived here Monday evening on the way back from England, where he spent the winter, to his property where he expects to operate on an extensive scale the present season.

Robert Smart, former Government assayer for Yukon, has been engaged by Captain Alexander as superintendent of the operations. Mr. Smart will arrive next week from Victoria, where he

was at the bedside of his aged father, when Captain Alexander left a week ago. The latter said there was little hope for the recovery of the aged man. Robert Smart is a thorough mining man and Captain Alexander is fortunate in securing his services.

The Engineer property is a high grade proposition, assays from it having shown as high as \$1,000 to the ton in gold. Captain Alexander says he will employ about thirty men during the season and regular shipments of ore will be made. The Captain returned to Carcross Tuesday morning.

RICH STRIKE REPORTED.

Officers and passengers on the steamers Vidette and Nasutlin, which arrived yesterday morning from Dawson, brought word of a rich placer strike having been made in the country between the heads of the White and Tanana rivers, says the White Horse (Y.T.) Star of the 13th inst. According to the story, two men washed out upward of \$900 in two days.

MINING IS ACTIVE IN NEW DENVER DISTRICT.

A New Denver despatch of the 15th inst. says:—

The new mill of the Silverton Mines, Ltd., to treat the ores of the Hewitt group, is working satisfactorily, and with a few improvements, now being made, will save the values of the sulphide ores on the property.

W. R. Will is clearing the trail to the Capella mine on Goat mountain, and work will probably be commenced this month. Some of the highest grade ore mined in the district was taken out of the Capella some years ago, one car of ore giving smelter returns of \$10,000.

J. H. Cory will go up to the Silverite group next week to take charge of development work.

Clive White, M.E., has accepted the position of superintendent on the Idaho-Alamo group.

Hermann Clever has four men developing the Tiger group on Silver mountain. At present they are driving in ore.

Men are being put to work at the Noble Five, near Sandon, and the regular force will be engaged in development work in the course of a week or ten days.

It is expected work will be resumed at the Surprise, near Sandon, next week. A few men are now at the mine putting things in order to commence the season's development work.

Two cars of ore are mined, ready for shipment, at the Idaho-Alamo, and will be hauled down to Alamo siding as soon as the repairs to the wagon road, now under way, are completed.

Joe Butler has struck it rich, he says, on Goat mountain. No assays have yet been made.

Alex. Ferguson started work this week on his lease on the Convention, Silver mountain.

BRITISH COLUMBIA COPPER CO.

The Engineering and Mining Journal, New York, has compiled the following information: During the 4-year period, 1909-1912, the British Columbia Copper Co., according to its annual reports, has produced 34,560,254 lbs. of refined copper, as follows: In 1909, 6,325,000 lbs.; 1910, 7,143,456 lbs.; 1911, 9,944,987 lbs., and 1912, 11,146,811 lbs. The operating cost as reported, after deducting gold and silver, was 9.82c, 9.94c, 11.63c, and 12.85c, respectively. A study of the financial statement, however, shows that the net income, after paying for plant additions, land, etc., was approximately 1.46c in 1909, 0.785c in 1910, 0.4c in 1911 and 0.734c in 1912 per lb. of copper. Based upon the average price reported for copper gives a dividend cost of 11.62c for 1909, 12c for 1910, 11.9c for 1911 and 15.93c for 1912. The cost per ton of ore, including all charges from ore in place to marketing as reported, was \$2.63, \$2.68, \$2.73, \$2.88 and \$2.45 from 1908 to the end of 1912 in the order named.

WAR EAGLE MINE HEADWORKS
BURNED.

Destructive Fire at Rossland Causes
Loss to Consolidated Co.

The Rossland "Miner" has printed the following account of the destruction by fire, on June 1, of the big shaft house and other buildings comprising the headworks of the War Eagle mine at Rossland, which mine is one of the well-known Centre Star group of mines owned by the Consolidated Mining and Smelting Company of Canada, Ltd.:

"One of Rossland's chief landmarks was destroyed by fire on Sunday evening, when the War Eagle shaft house, standing as it did on one of the slopes of Red Mountain, so that it could be seen from every portion of the city, went up in smoke and flames. At a quarter to six o'clock on that evening, flames were observed bursting through the windows of the big building, and every one in town watched their progress. The shaft house contained, besides the plant, a lot of very dry mining timber, ready for use in the mine, and this also burned very rapidly.

"The main building was more than 100 ft. in height; it had four floors, and the flames climbed rapidly from floor to floor; the glare could be seen through the windows as the fire reached the different levels, until finally the flames burst through the roof, like a volcano.

"The shaft house was 40 ft. wide and about 100 ft. in length. The fire soon spread to the War Eagle ore bins, just east of the shaft house; these were 50 ft. long by 20 ft. wide, and, being dry as tinder, were quickly consumed. The ore bins, in turn, set fire to the tank house, situated 100 ft. away, to the east, and, despite the fact that it contained 60,000 gal. of water, it blazed with much fury.

"With the shaft house, the ore bins and the tank on fire, there resulted a

blaze so large and with tongues of flame reaching so high above the burning structures that the spectacle was one, the like of which had never before been seen in Rossland.

"The powder magazine is situated a quarter of a mile to the north of the hoist, and city residents were fearful that would be reached by the flames, and that there would follow an explosion like that of several years ago, which had such disastrous results. Happily it proved to be too far away and out of the danger zone.

"After the fire had burned for nearly an hour, the structural steel frame of the building and the steel gallows frame, collapsed as easily as though they had been of cardboard.

"Three streams of water were gotten to bear on the flames in about three-quarters of an hour after they started—one from the fire pump, near the Centre Star compressor; a second from the two tanks on the hillside above the War Eagle offices, and the third from the Le Roi fire pump. About 800 ft. of fire hose was borrowed from the city fire hall and used. Hundreds of willing volunteers worked under the direction of the mine management. They fought the fire successfully from the shaft of the War Eagle. One bulkhead was put in on the 100-ft. level of the mine, and another on the 200-ft. level. The flames were prevented from entering the mine by means of well-directed streams of water from the collar of the shaft and from the 100-ft. level. Only about 25 ft. of the timbers below the collar were burned. It was a successful, though hard, struggle against the flames, and those who assisted were heartily thanked by the management.

"Mr. R. H. Stewart, general manager of the Consolidated Co., made the run up from Trail in a big automobile in a very short time; all the onlookers could see as the car passed through Rossland was a streak of dust.

"The flames continued their work of destruction until about 11 o'clock at night, but in the meanwhile the streams of water were kept constantly at work until finally the fire was extinguished. The loss is estimated at about \$50,000; it is partially covered by insurance.

"On Monday morning work was continued as usual in the mine, and a number of men were employed on the surface in clearing away the debris. The War Eagle hoist has been used to lower and bring up men and to handle waste and timber. The ore has been sent up through the Centre Star shaft so the destruction of the War Eagle shaft house will not seriously affect the production of ore, nor reduce in numbers the underground working force. The Centre Star hoist can do, and is doing, the work that had been done by the War Eagle hoist, so that the disaster is not nearly so serious as would have been the case had the Centre Star headworks been destroyed instead of those of the War Eagle.

"The War Eagle shaft house was erected in 1898-9, soon after the Gooderham-Bladstock syndicate acquired the mine. The work was done under the direction of Mr. John B. Hastings, while

Mr. John Fitzwilliams, lately deceased, was foreman. There was installed an electric hoist, which was driven by a synchronous motor, which kept in step with the generators at Bonnington Falls, and when the hoist was started there was no way of making it begin gradually, so that it began its operations at full speed. The consequence of this was that it tore out the cogs. As a result of this, there was an accident, the cage falling from the top to the bottom of the shaft, and two or three men were killed and some others injured. The electric hoist was then condemned, and the present double-drum hoist installed, and this has been in use ever since."

RICHMOND MINE MACHINERY BE-
ING INSTALLED.

The Rossland Miner of the 18th inst. says:—

The machinery for the Richmond Consolidated Mines in the South Belt, is now being unloaded, and active operations in that section will soon be in progress. The machinery car was switched to the Spitzee siding, and in the shipment is a Sullivan duplex two-stage belt-driven 14-drill compressor. It is being hauled to the compressor site at the Lilly May, where grading has been in progress for a couple of weeks in preparation for the compressor, hoist and the 200-horsepower motor. Tunneling on the two-compartment shaft is going forward at the 50-foot level, and the gallows frame, compressor building and blacksmith shop are under construction.

The Richmond Consolidated Mines, Ltd., embrace the Richmond, Lilly May, Black Horse, Hattie, Snow Drop, Sunbeam and Alice D. Fraction.

The new equipment provides ample facilities for diamond drill operations as well as general mine development. About fifteen men are employed under Managing Director J. L. Warner.

RECORD TIME FOR MACHINERY
SHIPMENT.

The Nelson Daily News of the 25th inst. says:—

Probably the record for speed in the shipment of mining machinery was made last week, in the shipment of compressor parts by the Sullivan Machinery company to the Mother Lode Shep Creek Mining company. The cast iron frames, weighing 5,092 lbs., for this company's compressor, were ordered from Chicago by telegraph by George Farish at 4 o'clock on the afternoon of June 17, and arrived at Salmo at 5 o'clock on June 21. They were hauled to the mill on June 22 and installed in the evening of June 22.

VERY RUDE

Says the Phoenix Pioneer: The other day a Chilliwack lady was honored with a stocking shower. There are a few stockings around Phoenix that might be benefitted by a shower or two.

GREAT MINING ACTIVITY AROUND
SANDON.

A Sandon despatch of the 25th inst. says.

The Slocan Star commenced shipping yesterday. R. S. Lennie and John Elliot of Vancouver and other directors were in Sandon this week.

It is understood that a contract has been let on the Payne tunnel.

The Wonderful mine has been opened up again. Four men are employed there.

George Gourmley has started work on his lease at the Evening mine. Hank Wright is still working at his claim, which adjoins the Evening.

W. A. Cameron was in town yesterday and went up to the Richmond-Eureka.

The Silverite mine, which has been operated all winter by William Springer and W. E. Finch, who are working the Idaho-Alamo mines, has been closed for a time and the supplies packed over to the Idaho Alamo. C. B. White is superintendent and Neil Tattrie and John Cory foremen. A large storehouse has been built on the flat below the mines and a wagon road is being made to connect with the Alamo.

The Cornish is being worked by A. Murphy with about six men.

The Hope mine sent out a car of ore this week and also the Richmond-Eureka.

Alex Smith, of the Surprise mine, was in town. More men are being put to work every week at that property.

The Noble Five mine has about 20 men at work. John Tattrie is again foreman.

The third man taken down in the slide last winter is still missing. The slide is patrolled every day.

J. Marshall of Phoenix is here and went up to the Dunedin mine, in which he has an interest. They have about 14 tons of ore out. This property adjoins the Reco.

The Bachelor mine at Three Forks is under lease to J. Cameron and Archie McCurvy. They have about 300 sacks of ore out. This ore is high grade.

Many mining men have been coming to Sandon lately, and a good summer is looked for.

MAY ENGAGE IN B. C. MINING.

The Vancouver Province of the 14th inst. says:

The Canadian Mining and Exploration Company, Limited, a close corporation controlled by New York and Montreal millionaires, may engage in mining operations in British Columbia. One of its principal mining experts, Mr. Ralph S. G. Stokes, has been sent out from New York to examine a number of mining propositions submitted to his principals. At the Hotel Vancouver today Mr. Stokes, who has had wide experience in every portion of the world, stated that his company was prepared to develop meritorious mining properties of any character, as well as to purchase ship-

ping mines. He will leave tonight for the interior.

The Canadian Mining and Exploration Company is largely interested in New Ontario, notably in the Dome mine at Porcupine, a free milling gold camp. One of its directors is Mr. Lorne McGibbon, a Montreal millionaire.

NEW COPPER FURNACE BLOWN IN
AT TRAIL.

A Trail despatch of the 9th inst., says: The new copper furnace at the Trail smelter was successfully blown in at 11 o'clock this morning. It is the largest one at the Trail plant, being 35 feet long, and it will have a capacity of 450 tons of ore every 24 hours. The style of the uptake differs materially from that of the others at present in use, a circular brick arch being built over the furnace itself. This is bound by steel rails of the same form which are tied by rods transversely above the furnace walls. A steel box extension is carried from the arch direct to the main brick flue. In it are two large steel hoppers for the purpose of settling the flue dust. These are placed above tracks, thus allowing a rapid and economical method of handling.

The general appearance is much neater than the old form of steel uptake and saves considerable head room in the main furnace building. The centre feed system has been adopted in the new furnace and it takes a train of five cars to each charge. The water connections to the furnace jackets have also been changed and are much easier of access than the previous style. The charge car track inside the furnace is water cooled by means of two pipes which run lengthwise under each rail, the rails being supported by two large pipes crosswise, these, too, having water circulation. The remaining furnaces will probably be remodelled after this type later on.

GRANBY COMPANY'S BIG ORE
RESERVES.

A recent visitor to the Granby company's properties both at Hidden creek and Phoenix is quoted in the current issue of the Boston Commercial as follows:

"The development of the Hidden creek properties of the Granby company is showing up wonderfully. Both by drill and underground work 16,000,000 tons of ore have already been demonstrated, and it is the estimate of the management that the old Phoenix properties now have 7,000,000 tons of ore remaining, or a ten-year life at Phoenix on the present basis of operations.

"The new smelter at Hidden creek will not be in operation much before the first of the year instead of September 1st, as originally estimated.

"In 1914, with two big smelters in operation, Granby will make a record of production and earnings which, on its small capitalization, should make a record to meet the desires of the most optimistic."

DUNEDIN TO MAKE SHIPMENT.

Ore averaging \$180 to the ton is now being taken out and sacked for shipment from the Dunedin mine, four miles from Sandon, says Jas. Marshall, one of the co-owners. "This summer, with ordinary luck, we expect to ship in the neighbourhood of 80 tons to the Consolidated company's smelter at Trail." Word was received recently that the trail is now open for horses, the latter being the only method possible as rawhiding would necessitate a continuous shipment in order to keep the track open. Operations at the mine have been seriously hampered the past winter by reason of snow slides, one of which damaged the blacksmith shop and caused the death of one of the miners. Mr. Marshall expects to leave for a visit to the property within the next ten days.

IMPRESSED WITH GREEN CITY.

The Rossland Miner of the 6th inst. says:—

Geo. H. Green and W. P. Valleuer, mining engineer, have just returned from Green City. Mr. Valleuer was very much impressed with the Green City Company's holdings. He says he never saw such surface showings of gold-copper ore in all of his travels as he saw at Green City, and such an abundance of water for power purposes. As regards lumber, he says he never saw such fine cedars, one tree measuring 24 feet around. The roads from Rossland to Green City are in splendid condition, and there are about 25 men on the roads still improving them. It is really a pleasure trip from Rossland to Green City; the scenery is beautiful. Mr. Valleuer expressed himself that he did not understand how it is that big capitalists have not taken hold of some of these splendid gold-copper properties. The Green City company has certainly got a wonderful proposition, and no one can realize how good it is until they go and see it for themselves.

THE COPPER MARKET.

The copper market is steadier on a basis of 15 cents for electrolytic, while lake is quoted at 15 1-3 cents, says the Boston Commercial. There is a large movement in the jobbing trade and the retail demand is good. No important transactions on the part of the producers have been reported recently, but some speculative lots have sold below 15 cents. The quantity sold has been small and in no way reflects the actual condition of the market.

The labor strike at the Laurel Hill refinery may prove to be a factor in the copper situation unless a settlement is reached within a reasonable period. This refinery has a capacity for placing between 30,000,000 and 35,000,000 pounds of copper a month on the market. Its principal output is electrolytic copper. The total stocks of copper on hand in the United States on June first was 67,400,000 pounds. Allowing that two-thirds of that was electrolytic copper, the effect of a shut down of one month at this refinery might easily be imagined.

The departure for Europe of John D. Ryan, president of the Amalgamated Copper Company and W. D. Thornton, president of the Greene Cananea, is expected to be followed by a buying movement from abroad, as that is what happened when those two made a similar trip last year.

The recent reaction in the price of copper from 15 3-4 to 15 cents cannot be attributed to any unfavorable change in the situation, if the monthly statistics are to be accepted as showing accurately the general trend of production and consumption. During the past three months the domestic visible supply has declined nearly 55,000,000 pounds. A similar decline during the next three months would practically wipe out this surplus.

Undoubtedly mining interests will take steps to increase their production and thus maintain a fairly comfortable supply on the market. The present surplus would not fill two weeks' requirements at the present rate of consumption and reports.

EXCELLENT PROGRESS BEING MADE AT THE AUFEAS MINES

Work in the heading of the main tunnel on the property of the Aufeas Gold Mines, Limited, is proceeding very satisfactory, says the West Yale Review of the 28th inst. The indications are that the ore body is close at hand, the whole face of the tunnel being heavily impregnated with iron oxides and the calcite seams which appear at intervals in the face are filled with the mispickel ore.

A sample of the ore taken from one of these calcite seams recently, upon assay, gave values of \$48 to the ton.

As soon as the ore is struck in the tunnel the work of erecting the aerial tramway will be put in hand without any delay, all the details for this work having been already settled.

Altogether prospects are very rosy indeed, and there can be very little doubt but that Hope will, before many weeks have passed, be able to boast of having a working and paying mine in its immediate vicinity.

Mr. H. V. Dardier, the president of the company, will, as soon as the ore is struck, leave for England to arrange the instalment of a plant at the mines to treat the ore on the spot, by which ninety per cent. of the gold will be recovered in the form of bullion and the concentrates containing the ten per cent. of the gold not recovered on the amalgam plates and all the copper and silver will be shipped to Tacoma smelter for separation. Until this plant can be installed, however, the crude ore will be shipped in bulk to Tacoma for treatment.

The tunnel on the property has now been driven for a distance of three hundred and forty feet.

IT IS OFTEN THUS.

Griggs: "Didd that little deal of yours turn out a paying investment?"

Briggs: "Oh, yes, only I wasn't the payee."—Boston Transcript.

TO ADVERTISE MINING POSSIBILITIES.

Mining men and prospectors in the vicinity of Phoenix and throughout the Boundary district, are reminded that another splendid opportunity to advertise the merits of their respective properties is afforded by the forthcoming Vancouver exhibition, where a special building, devoted to mines and mining, is being provided, says the Phoenix Pioneer of the 14th inst., in an article the good advice of which might well be taken to heart by every other mining district in British Columbia. The exhibition management announce that they will defray the cost of transporting the specimens and will accept large blocks of ore as well as the smaller samples. Too little attention has heretofore been directed to this method of advertising the mining possibilities of a district, but now that the big mining investment companies are commencing to establish agencies on the coast, the importance of such an opportunity as that afforded by the Vancouver exhibition will readily be seen.

EFFECTS OF COAL MINERS' STRIKES.

A contributor to the Pacific Mining Journal, published in Seattle, Washington, wrote: "It takes money to properly equip mines, and it is the lack of investment in some of our mines that makes mining costs so high that we couldn't compete with oil at 60 cents. Our laws and the attitude of our lawmakers make it possible for a certain body of men, a great many of whom are not even interested in the welfare of our country, let alone the commerce of this state, to dictate to the greater number of the operators of the state and make their dictation stick. A corporation can be sued and made responsible for one side of a contract, but they, in turn, are not responsible for the other side as individuals, or as a body. They can with impunity threaten and sometimes carry out their threats on citizens who are acting within their rights. They are, as a class, of the lowest order of intelligence and command a higher rate of pay for their work. And it was during a little tilt with this body of men that the operators allowed the oil people to creep in and nail the best of the fuel business in the state. Plainly the Crow's Nest strike in Canada proved to the Great Northern Railroad the fallacy of depending on coal from their mines to run the road with.

"The Vancouver Island strike may have proved the same thing to a large number of steamship companies. A man is within his rights when he strikes, but he has no moral right to try to run his employer's business, or conduct the personal affairs of his brother workman. Proper laws would regulate this matter so that everyone would be better off. If the majority of laboring men believed in labor unions as they are conducted, then it would be a foregone conclusion that all business with Labor would be done through their business agent. This is not the case, however, the strength of some unions being not in their numbers or esprit de corps, but in their leaders' lungs and

ability to break the law and get away with it.

"To the principle involved, no one, I believe, would object, but as it works out I consider it the strongest menace the coal mining industry has. However, it all may have been a blessing in disguise. I've known packers to rub mud in the bell mule's mouth to make him forget he had a stomach ache."

INCREASING POWER PLANT.

The Rossland Miner of the 21st inst. says:

To keep up with the demand, the West Kootenay Power company is arranging for the installation of an additional unit of 8,000 horse power at Upper Bonnington. The company now has 24,000 horse power in operation, distributed between Upper and Lower Bonnington and Cascade, and the plant at the upper falls is to have another 8,000.

The company increased its load by 25 per cent. last year, and it is hoped to raise this increase to 30 per cent. this year. The increase, too, was from Rossland, proving the substantial activity of the local properties.

COPPER AS ALLOY IN STEEL RAILS PROVES SUCCESS

Chicago, Milwaukee & St. Paul railway officials say that complete reports on the 5,000 tons of steel rails, which the company ordered last year with an alloy of 0.6 per cent. copper, which were laid in various sections of the system, principally in the northwest, show that not one broken rail has been found in the lot. This is considered a remarkable showing. The company has ordered 10,000 more tons of the same copper-steel rails and if the result is similar, will adopt this rail as its standard.—New York Engineering and Mining Journal.

THINKS HIGHLY OF SALINE ELECTRICAL SEPARATION

Dr. Orin W. Joslin, formerly of Milwaukee, and now at Linden, Wis., assures us that we may have in the not far distant future a process for separating all metals from the ores by the simple elements of common salt and water in the presence of electricity; that no matter how many metals are contained in the ore, they will all be separated at the same time and collected separately, and that when collected they will be chemically pure, even including iron; that such a plant can be built on an individual property at a cost not to exceed \$15,000, with a capacity of 100 tons per day; and that the cost of separating all of these metals together will range from 40 cents to \$1.75 per ton. The Dodgeville, Wis., Chronicle says it awaits with nervous anxiety some tests now being made "in Colorado in a locality where at least six different metals exist within a radius of four miles." Our nerves are calm. We have an advance seventh son report on the result.—New York Engineering and Mining Journal.

MINING ACTIVITY IMPRESSES VISITORS.

The Nelson Daily News of the 16th inst. says:—

Impressed by the extent of the mining and smelting operations in this district and greatly interested in the ore body which has been struck in the low level of the Slocan Star mine, the famous ore body at the Standard, the large bodies at the Bluebell and the new mill at the Hewitt mine, C. T. Brown and T. C. Brown of Socorro, N. M.; R. B. Paul of Denver, Colo., and Lewis G. Rowand of New York, prominent United States mining and smelting men, who are particularly interested in zinc propositions, have completed a tour of the Slocan and Ainsworth districts and a visit to Trail smelter and the Lucky Jim mine, and will leave this morning for Arizona and California. They were at the Strathcona last night.

Great changes for the better were noted in the Slocan district by Mr. Rowand, who was in this country about ten years ago. He was particularly struck with the activity around Silverton and by the improvements which have been made at Trail smelter.

SIR WILFRID EXPLAINS.

Sir Wilfrid Laurier and his friends have already begun to explain away the course of the party machine in rejecting the Naval Bill. The prompt announcement of the Imperial Government that Great Britain will add three ships to her own programme, to fill the place of those expected from Canada, is a sudden and conclusive answer to the claim that the extra ships were not needed. It is also a conclusive reply to the plea that Canada would have imposed an obligation on the British Government by providing ships for the Admiralty to maintain. It is clear now that in the opinion of the British Government the ships are needed, and that to such an extent an emergency exists. It is also clear that the Canadian gift would, instead of adding an obligation to Great Britain, have relieved the British taxpayer of the cost of the ships. Sir Wilfrid cannot explain away these facts. He can only protest in Quebec that he has vindicated Canadian independence, and in other provinces that he destroyed the Navy Bill because he wished to do more for the Empire than the measure could accomplish. — Vancouver News-Advertiser.

THE EVIL OF THE DRY CAMP.

Apropos of the "Dry Camp" system in Canada for militia training and the abolition of the canteen, the following will be interesting and significant:

"The canteen controversy has now been enlarged by the evidence of Brigadier-General Clarence R. Edwards and Surgeon-General G. H. Torney. General Edwards, speaking at the army conference recently held at Washington, said that the cocaine habit is rapidly sapping the manhood and efficiency of the rank and file of the United States army, and Surgeon-General Tor-

ney, speaking from the medical point of view, confirmed this sinister opinion. The cocaine habit, said both these experts, was acquired in the dives that have grown up like fungi around the army posts since the abolition of the orderly and supervised canteen. The owners of these dives are in the habit of giving an added horror to their liquid poisons by a drug still more fatal."

DIFFICULT PROBLEM SOLVED.

The Rossland Miner of the 28th ult. says:

H. W. Newton, superintendent of the mill of the North Washington Power and Reduction Co., of Republic, was among those who attended the meeting of the Western Branch of the Canadian Mining Institute. Mr. Newton is a son of W. G. Newton, who, previous to six years ago was foreman of the Miner job dept. for some time. Mr. Newton is a metallurgist of note, although he looks to be not over 27 years old, and has a boyish appearance. He is credited with having solved the very difficult problem of successfully reducing the ore of Republic. Herbert A. Megraw, in discussing the question in the Engineering and Mining Journal says:

"In discussing the matter with H. W. Newton, superintendent of the mill of the North Washington Power and Reduction Co., who is familiar with the ores, having studied them and experimented with them for years, and who is responsible for the present successful treatment, he said that he had made a number of experiments on roasted samples and invariably found that while a slight increase of gold extraction was obtained, on subsequent cyanidation, invariably the extraction of silver decreased and almost disappeared. This was undoubtedly the reason why the mill, built by Jackling, was not successful, as the silver is in quantities too large to be ignored and constitutes a large proportion of the values.

"Another point which has been detected and pointed out by Mr. Newton, is that the gold occurs in such fine particles as to be rarely visible and is scattered through an extremely close-grained rock, so that the finest grinding is necessary to liberate it and expose it to the action of the cyanide solution.

"The silver probably occurs as a sulphide or sub-sulphide, and is soluble readily enough in a stronger cyanide solution, though when roasted it is converted into some other form, probably metallic silver, which is not readily soluble in cyanide solutions. The reasonable treatment, then, would appear to be the sliming of the total ore, and agitation in cyanide solutions without roasting or any other auxiliary treatment. And this has proved to be the case."

SOUTH AFRICA GOLD

OUTPUT SHOWS INCREASE

The gold output of South Africa is showing an increase this year over 1912. The first quarter showed an output from the Transvaal mines of 2,314,000 ounces, Rhodesia 687,317 ounces and West Africa 103,000 ounces.

BOURASSA'S IDEALS.

Brother Bourassa's ideals are thus clear. He wants Canada to be first of all a sponge. She is to sponge for protection on Britain, and if that won't do she is to sponge for protection on the Monroe Doctrine and the United States. Lofty thoughts. Wonder how this country would get along if all of its people were Bourassas?—Ottawa Journal.

THE FRA ON BRITISH COLUMBIA.

Apropos of farming, which is today a live subject round Kamloops, the following remark made by Elbert Hubbard of New York, the well-known humorist, before the Vancouver Progress club recently, will be interesting, besides being very much to the point:

"The most important business in the world was farming. There are only four sources of production, the farmer, the mine, the forest and the sea. The second most important business is transportation; the third manufacturing, and the fourth, distribution. British Columbia will never be great until she feeds her people. It should be the garden spot of the world."

John T. Blackburn, mine owner and operator, of Spokane, arrived in town Tuesday on his way to Leadville, via Tulameen. For some dozen years he was engaged in mining near Twisp, Wash. Mr. Blackburn will spend the summer in the district and will carry on extensive development work at Leadville, where he has acquired mineral interests.—Similkameen Star.

"The British Columbia Old Country Public School Boys' Association"

All Old Boys of British Public Schools now in Vancouver Island, B. C., are requested to communicate the following information to the Secretary of the Association. (1) Name. (2) Present address. (3) Old School and date of residence there. (4) Present occupation.

A copy of the constitution and by-laws of the Association will be sent to every old public school boy who is not already a member thereof.

It is hoped that all may join, so that a complete register of old public school boys now in Vancouver Island may be obtained.

Old members who have not done so are requested to notify the Secretary of any change of address.

Address to the Secretary,
A. R. SHERWOOD
BOX 812. VICTORIA, B.C.

MINING NOTES

The secretary of the International Geological Congress has issued a list of leaders, secretaries and guides of the various excursion parties in connection with the Congress. Those in which Western Canadians will be mostly interested are the transcontinental excursions numbered C1 and C2. The first of these will have as its leader, Dr. Frank D. Adams, of McGill University. Among its guides are the following: J. A. Allan, Calgary to Kamloops; Dr. A. E. Barlow, Banff to Golden; Mr. L. D. Burling, Field; Mr. C. H. Clapp, Victoria; Dr. R. A. Daly, Banff to Vancouver; Mr. J. C. Gwillim, Calgary; Mr. R. G. McConnell, Banff to Golden; Mr. W. J. Sutton, Victoria; Dr. C. D. Walcott, Field. C2 will have as its leader, Dr. R. W. Brock, with Mr. Jas. McEvoy as associate leader, and Mr. H. E. T. Haultain as secretary. Its guides will include: Mr. J. A. Allan, Glacier to Mt. Robson; Mr. Chas. Camsell, Phoenix via Similkameen and Nicola Valley to Victoria; Mr. C. H. Clapp, Victoria; Mr. W. J. Dick, Hillcrest to Fernie, and at Nanaimo; Mr. D. B. Dowling, Winnipeg to Fernie; Dr. C. W. Drysdale (now in Rossland), Rossland, Phoenix, and Kamloops to Savona; Mr. O. S. Finnie, Hillcrest to Fernie; Mr. T. Graham, Corbin, Fernie and Nanaimo; Mr. J. C. Gwillim and Mr. W. W. Leach, Hillcrest to Elko, and at Corbin; Mr. O. E. LeRoy, Kootenay Landing to Phoenix, and in Slocan; Mr. J. D. McKenzie, Nanaimo; Mr. S. J. Schofield, Elko to Kootenay Landing; Mr. W. J. Sutton, Victoria; Dr. C. D. Walcott, Mt. Robson Station and vicinity; Dr. A. W. G. Wilson, Phoenix. C8, Yukon and Malaspina, and C9, Prince Rupert and Skeena River, will have Mr. R. G. McConnell as leader, and the following as guides: Messrs. R. W. Brock, D. D. Cairnes (Whitehorse to Dawson), W. A. Johnston, W. W. Leach and Wm. Fleet Robertson (Hazelton) and L. Martin (Skagway to Yakutat).

C. T. Brown and T. C. Brown, of Socorro, N. M.; R. B. Paul of Denver, Colo., and Lewis G. Rowand of New York, prominent mining and smelting men from the American side, were visitors at Riondel last week, being interested visitors at the Bluebell mine, says the Kaslo Kootenaiian of the 19th inst. They are particularly interested in zinc propositions and also visited the Lucky Jim, the Standard and Slocan Star mines in this district. Great changes for the better throughout the district were noted by Mr. Rowand, who was in this section about ten years ago. He was particularly struck with the activity around Silvertown and by the improvements which have been made at the Trail smelter.

Ore averaging about \$180 to the ton is now being taken out and sacked for shipment from the Dunedin mine, four miles from Sandon, according to Jas. Marshall, one of the co-owners. "This summer, with ordinary luck," he said, "we expect to ship in the neighborhood of 80 tons to the Consolidated company's smelter at Trail." The trail is

now open for horses, packing now being the method of bringing the ore to the loading platforms at Sandon. Operations at the mine have been seriously hampered the past winter by reason of snow-slides, one of which damaged the blacksmith shop and caused the death of one of the miners.

The Engineering and Mining Journal shows the smelters' production of copper in Canada to have been: In 1910, 52,492,282 lbs.; 1911, 56,370,754 lbs.; 1912, 75,425,575 lbs.

The Cariboo Observer says that the warm weather prevailing for the last three or four days is bringing the long looked for freshets in the various creeks, much to the satisfaction of the hydraulic mine managers. A few of the claims have been piping for the last week with two or three inch nozzles, but it is expected that in a day or so all the claims will be working under a good head of water.

Simon Fitzgerald and his brother John are prospecting a portion of the famous Bitter creek placers. They have only just returned to Stewart from O'Donnell river, where they staked some valuable property. J. F. Maclaren of Vancouver has been testing the gravels at the junction of Bitter creek and Bear river on behalf of Vancouver capitalists. —Portland Canal Miner.

On Wednesday night (May 28), says the Omineca Herald, P. J. and George Jennings returned from a trip of inspection to the Highland Boy group on Rocher de Boule. They have selected a camp site and arranged for a trail to their property. They found the snow disappearing very fast from the basin. On top of the mountain the snow is gone and it is a matter of only a few days until the basin is clear also. Arrangements have been made for the trail, and work is starting in a few days. Mr. Jennings went down to Rupert for a few days, and upon his return will have the first bunch of supplies taken up to the new mine and developing will be under way in a couple of weeks at the outside.

W. R. Will is clearing the trail to the Capella mine on Goat mountain, and work will probably be commenced this month. Some of the highest grade ore mined in the district was taken out of the Capella some years ago, one car of ore giving smelter returns of \$10,000. —Slocan Record.

Much interest attaches to the possibility that the Lucky Jim Zinc Mines, Ltd., may remodel the Monitor & Ajax Fraction concentrator at Roseberry and use it for concentrating the milling ores of the Bear Lake zinc property, says an exchange. The plant was put in about eight years ago by Maurice Gintzburger, now a mining broker of Vancouver, and was designed to take care of about one hundred tons per day. Although a large expenditure was made, for some reason it was never made use of, the plant having lain inoperative since that time.

A total of 112,000 tons of ore has been shipped this year from the Rossland mines to date, over half of which came from the Centre Star.

W. B. Smith has a small force on the U. S. property, in the Jackson basin and intends to run a telephone line from that claim to the Utica, in order to get better communication with the town, says the Kaslo Kootenaiian.

An active campaign of development on the Kitseukla coal fields has already been undertaken by J. W. Hart and Wm. McDonald. This coal was staked by them last summer and they did considerable prospecting, satisfying themselves that the fields were worth developing. About ten days ago they arrived at Skeena Crossing and started at once packing in a bunch of supplies to enable them to work eight or ten men all summer and fall.—Omineca Herald.

P. J. Jennings returned recently from Prince Rupert and got things started immediately on the Highland Boy group on Rocher de Boule mountain.—Omineca Herald.

W. B. Dornberg was in town Wednesday on his way to Leadville. He is largely interested in Treasure Mountain silver-lead mine, the tunnel in which is now driven 360 feet.—Similkameen Star.

It is reported that the G. T. P. has fixed a rate of \$11 a ton on ore from Hazelton to Trail, says the Omineca Miner. This is a slight reduction on the rate heretofore in effect.

The largest cargo of copper ore ever sent from the North—2,600 tons coming from the mines at Latouche and 500 tons from Ellamar—was shipped by the steamer Edith, which left Prince William Sound ports on June 13. The ore was consigned to the Tacoma smeltery.

Coal Age, of New York, recently published the following from its Spokane, Washington correspondent: It is said that a big profit is made by the coal dealers in Spokane, and that the domestic trade could be served with Roslyn and Crow's Nest Pass coals at about \$6.75 to \$7.25 a ton, according to the haul, and at about \$8 to \$8.25 for the Wyoming product, the difference in freight rates making the latter coal higher. There is said to be about \$1 difference in the cost of slack and mine run, and there is 25 cents more duty on lump coal for family use from Canada than on slack or steam. Prices at which steam coal is sold to business blocks are: For mine run, \$5.25, or \$5.75 to \$6.25 delivered. This coal costs at the mine in the Crow's Nest district: Slack, \$2; mine run, \$2.25 to \$2.35, and lump, \$3 to \$3.25 a ton. The last retails at \$8.75 to \$9.25 f.o.b. Spokane. The freight rate on coal from the Crow's Nest Pass district ranges from \$2.15 to \$2.25 a ton, and the duty is 15 cents on slack and 40 cents on mine run and lump. On this basis the lump coal costs from \$5.65 to \$5.80 laid down in Spokane, and as it is claimed that this must be screened, and the screenings sold at a low rate, this loss is estimated at about 25 cents a ton. Taking the benefit of this, the highest cost of Canadian coal is \$6.05 a ton.

DOMINION BUDGET MAKES FINE SHOWING.

An Ottawa dispatch of the 15th inst. says: The members of the House of Commons got a surprise today in the form of Hon. W. T. White's annual budget statement.

The most striking feature of the statement is a record surplus of \$55,000,000. This immense surplus the minister estimated will allow the government to pay \$33,000,000 of special expenditure chargeable to capital account, provide \$1,300,000 for singing fund, making a reduction of the national debt.

Revenue Increases \$32,000,000.

The total revenue of the fiscal year just closed Mr. White placed at \$168,250,000, an increase of more than \$32,000,000 over the revenue of the previous year, and a sum equal to the entire revenue of the Dominion twenty years ago. The surplus last year was slightly under \$38,000,000.

For the current fiscal year, which will end on March 31, 1914, Mr. White estimated a total expenditure of \$179,000,000. To this must be added the supplementary estimates yet to be brought down, railway subsidies, etc.

There was also the sum that would be necessary to start construction of the three Dreadnoughts. The total estimated expenditure would be close to \$200,000,000, though a considerable amount of this would not be spent.

The minister believed that the revenue for the current year, despite the large proposed expenditures, would meet all obligations.

Canadian Credit High.

As the outcome of the world-wide financial conditions during the year higher rates of interest had been payable in Canada. The price of the Dominion's 1930-50 stock had been slightly depressed, but had, on the whole, been well maintained. Recent quotations for the Dominion 3 1-2 per cent. stock had been 94 to 96, and the credit of the Dominion, as reflected in the standing of its securities, had been among the highest in the world throughout the period of stringency.

Dominion Trade Figures.

Coming to the consideration of Canadian trade figures, Mr. White stated that in the fiscal year 1911-12 the aggregate of imports and exports had been \$874,637,749 or an increase of some \$105,000,000 over the preceding year. In 1912-13 the total had been more than a thousand million dollars. In 1908 the imports of Canada had been \$370,000,000 and the exports \$380,000,000, or a total of \$650,000,000. In other words, imports had equalled 56 per cent. of the total.

Work has been resumed on the property of the Dividend Lake View Consolidated Company. The company owns several claims on the west side of Osoyoos Lake, just north of the International Boundary. The values are chiefly in gold, and the present plans include the erection of a mill to treat the ores.

W. E. Zwicky and H. J. Pierce, the latter representing the Starhorn interests, have an option on the outstanding Krao stock, says the Kaslo Kootenian. The Krao is a high grade Ainsworth property, but has been idle five or six years.



NOTICE OF CANCELLATION OF RESERVE

NOTICE IS HEREBY GIVEN that the reserve existing on lands embraced in Township 24, Rupert District, notice of which, bearing date June 12, 1912, was published in The B. C. Gazette on June 13, 1912, be cancelled to permit of the pre-emption of said lands under the provisions of Section 10 of the "Land Act" on and after 9 o'clock in the forenoon of Friday, October 17, 1913; all such pre-emption entries to be made in accordance with existing surveys varying in area with a maximum of 40, 80 or 160 acres to each pre-emption, as the said lands may be subdivided by a survey.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B. C.
9th July, 1913.

To Surveyors and Prospectors

Messrs. TEMPLE & TRACY having purchased the Ranching and Store business near **Hanceville, B.C.** formerly owned by Mr. Norman Lee, wish to announce that they are prepared to

Outfit and Equip MINING AND SURVEYING PARTIES

who may be going into the Chilcoten country or towards Bella Coola, with

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Supplies Always Kept on Hand**
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CANCELLATION OF RESERVE.

Notice is hereby given that the reserve existing upon Crown lands situated in Range 4, Coast District, and more particularly described from the southwest corner of Township 10, bearing date of the 25th day of May, 1910, and published in the British Columbia Gazette on the 26th day of May, 1910, is cancelled in so far as same affects the acquisition of said lands under the provisions of the "Coal and Petroleum Act."

R. A. RENWICK,

Deputy Minister of Lands.

Department of Lands,
Victoria, B.C., May 5th, 1913.



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under Timber License No. 31020, now expired, situated at Pender Harbor, notice of which appeared in the British Columbia Gazette on the 27th of December, 1907, is cancelled, and that said lands will be open to entry by pre-emption at 9 a.m. on Monday, the 25th day of August, 1913.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B.C., 17th May, 1913.



DEPARTMENT OF LANDS.

CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under Timber License No. 33093, now expired on Cortes Island, Sayward District, notice of which appeared in the British Columbia Gazette on the 27th of December, is cancelled, and that said lands will be open to entry by pre-emption at 9 a.m. on Monday, the 25th of August, 1913.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B.C., 17th May, 1913.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing by reason of the notice published in the British Columbia Gazette of the 27th December, 1907, is cancelled in so far as the same relates to the following described lands, so as to permit of the sale of the timber standing thereon:—

Those certain parcels or tracts of land situated in New Westminster District, and which may be more fully described as follows:—

(1.) Commencing at the southerly southeast corner of Lot 918, New Westminster District; thence south 15 chains along the east boundary of Lot 2563A; thence East 20 chains, more or less to the east boundary of Lot 569; thence northerly along the east boundary of the said Lot 569 a distance of 15 chains, more or less, to the southwest corner of said Lot 918; thence easterly along the south boundary of said lot to the point of commencement; containing by admeasurement 30 acres, more or less:

(2.) Commencing at the most easterly southeast corner of Lot 569, New Westminster District; thence south 10 chains, thence west 40 chains, more or less, to the fractional east boundary of Lot 569; thence north along said boundary a distance of 10 chains, more or less, to an angle of said lot; thence easterly along the fractional south boundary of said lot to the point of commencement; containing by admeasurement 40 acres, more or less.

ROBT. A. RENWICK,
Deputy Minister of Lands.

Department of Lands,
Victoria, B. C.



CANCELLATION OF RESERVE

NOTICE is hereby given that the reserve of vacant Crown lands in New Westminster District, notice of which appeared in the B. C. Gazette on the 19th of October, 1911, is cancelled in so far as it relates to that portion of said lands covered by the applications to lease of Hermon Wilber Vance and John Pederson.

ROBT. A. RENWICK,
Deputy Minister of Lands.

Lands Department, Victoria, B.C.
2nd April, 1913.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing over Crown lands in New Westminster District, formerly covered by Special Timber Licence 16968, by reason of the notice published in the British Columbia Gazette of the 27th December, 1907, and bearing date of the 24th day of December, 1907, is cancelled in so far as the same relates to the following described parcel of land: 'Commencing at a post planted at the north-east corner of Lot 769, New Westminster District; thence west 17 chains; thence north 40 chains; thence east 40 chains; thence south 13 chains, more or less, to the shore of St. Vincent Bay; thence following the shore-line of St. Vincent Bay to the point of commencement'; and that the said lands will be opened for entry by pre-emption on Wednesday, the 23rd day of July, at 9 o'clock a.m.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B. C., April 14th, 1913.

jy 12



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing upon Crown lands in the Cariboo and Cassiar Districts by reason of a notice, bearing date September 12th, 1907, and published in the British Columbia Gazette on September 12th, 1907, as well as the reserve existing upon Crown lands within the Land Recording Districts of Cariboo and Lillooet and the Kamloops Division of Yale Land Recording District by reason of a notice, bearing date April 3rd, 1911, and published in the British Columbia Gazette, on April 6th, 1911, is cancelled in so far as the same affect the acquisition of said lands under the provisions of the "Coal and Petroleum Act."

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B. C., April 14th, 1913.

jy 12

The development of the Granby Co.'s new properties at Hidden Creek by diamond drilling has been very successful, and over 16,000,000 tons of ore are stated to have been proven up by this means.

George Scott of Nelson and T. Corkhill of Michel left on Tuesday for Perry Creek to do the annual assessment work on a large mining property in which they are interested.—Cranbrook Prospector.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing over the lands surveyed as Lot 1603, Group 1, New Westminster District, by reason of a notice published in the British Columbia Gazette of the 27th of December, 1907, and bearing date the 24th day of December, 1907, is cancelled in so far as it relates to the pre-emption of said lands, and that the said lands will be thrown open for pre-emption under the provisions of section 2 of the "Land Act Amendment Act, 1913," on Tuesday, July 22nd, 1913, at 9 o'clock a.m., and that no pre-emption record shall include more than 40 acres; the said lot being divided for pre-emption purposes into quarters of 40 acres each.

ROBT. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B.C., April 14th, 1913.

ap 19

jy 12



NOTICE OF REMOVAL OF PROVINCIAL ASSESSOR AND COLLECTOR'S OFFICE.

Notice is hereby given that, on and after June 5, 1913, the Provincial Assessor and Collector's Office, Parliament Buildings, will be removed to the Belmont House, rooms 116, 117, 118, corner of Government and Humboldt Streets, Victoria, B. C.

All assessed taxes on real property, personal property and income, including the taxes due by corporations and others under the "Taxation Act," also all rural school taxes under the "Public Schools Act," for the Victoria assessment district, will, therefore, be payable in future at the above-named offices.

Taxpayers are reminded that in order to obtain the discount of 10 per cent. on the current year's taxes payment must be made to the Collector at the above address on or before the 30th day of June, 1913.

All communications respecting taxes may be addressed to the undersigned, Postoffice Drawer 1597, or to the above address.

E. E. LEASON,
Provincial Assessor and Collector,
Victoria Assessment District.
Dated at Victoria, B. C., June 2, 1913.

The dirt that is being taken by the gold dredge at Goldhill from the bottom of the Lardo river, is said to carry values of \$1.75 to the cubic yard.

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One double-drum hoist, drums 8 ft. diameter, 6 ft. 3 in. wide, frame 24 feet x 11 ft. 6 ft. cylinders, 14 x 18, capacity, 2½ tons at 700 feet per minute. One 100 h. p. and one 75 h. p. boiler, both tested to 100 lbs. pressure. One Northey sinking pump, 8 in. x 4 in. x 12 in. One Worthington duplex pump, 20 x 10½ x 10. One 40 h. p. Jenckes Machine Company engine, 10 x 14.

Address

The Canadian Copper Company
Copper Cliff, Ontario.

The city of Kelowna on Okanagan lake has a petroleum excitement and several claims have been staked out by the residents.

The F. H. Lantz Company, Ltd.

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CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering Lot 49, Range 1, Coast District, notice of which appeared in the British Columbia Gazette on the 27th of December, 1907, is cancelled, and that said lands will be opened to entry by pre-emption at 9 a.m. on the 11th day of August, 1913.

R. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B.C., May 5th, 1913.



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering a parcel of land situated in the vicinity of Howe Sound, formerly covered by Timber License No. 17452, now expired, and more particularly described as: Commencing at a post planted on the southeast corner of Lot 835, New Westminster District; thence north 40 chains; thence west 40 chains, more or less, to the east boundary of Lot 3200, New Westminster District; thence south 72 chains, more or less to the shore of Howe Sound; thence following the shore line in a northeasterly direction to the point of commencement, notice of which appeared in the British Columbia Gazette on the 27th of December, 1907, is cancelled and the land will be open for entry by pre-emption on the 1st day of August, 1913.

R. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B.C., May 5th, 1913.

The government is building a wagon road from New Denver to the Hartney mine.

INDEX

Subject	Page
The Mining Situation in B.C.	5
News from Mining Camps	6
Special Correspondence Regarding B. C. Mining	7
General News	9
Report of Annual Meeting B. C. Oil & Coal Development Co. Ltd. 1913	9
Kamloops Man Pleased with South-East Kootenay Oil	10
Harris Mines Near Hazelton	13
Ore Leaves New Hazelton for Smelter	14
Examine Owen Lake Property	14
Hedley Gold Mining Co. Pays Second Dividend this Year	15
Mining Company Notes	15
Personal and General	16
Obituary	18
Honors for B. C. Surveyors	19
Kootenay Ore Production	19
Editorial	20
Metal Markets	21
Coast and Island Mining—	
Granby Consolidated Buys Claim on Portland Canal	22
Good Progress on Portland Canal Tunnel	22
Portland Canal Ore Exhibit	22
Pleased with Lillooet Properties	23
Granby Co. Leases Mt. Andrew mine	23
British Columbia Coper Co.	24
War Eagle Mine Headworks Burned	24
Activity in Sandon	25
Coper Market	25
Progress at Aufeus Mine	26
Mining Notes	28
Dominion Budget Makes Fine Showing	29
Bearing Canadian Prospects	33
Sanitation in Mines and Mining Towns	34
Methods of Explosives Analysis	35
Bourassism	36

CORONATION MINE, LILLOOET, STARTS CRUSHING.

While exact details of the results of the crushing of the ore on the Coronation mine at Lillooet are not to hand as we go to press, it is known that 168 tons were put through with a recovery of 87 per cent. Values are reported to be high, but we shall have full information in our next issue.

WHY NOT USE THE ANTI-MILITARISTS INSTEAD?

Writing to Manager Rolston of the Vancouver Exhibition Association in regard to supplying animals for Hastings Park, W. O. Learn of San Antonio, Texas, points out one of the new horrors of war. He states that on account of the civil war in Mexico he has been unable to secure his usual supply of young parrots.

THE WORK OF THE AMATEUR.

Son of the House (to caller)—"I wanted to see you cos father says you made yourself."

Caller—"Yes, my lad, and I'm proud of it."

Son of House—"B—but why did you do it like that?"—Punch.

MINING STOCK QUOTATIONS.

Supplied by Waghorn, Gwynne & Co., Stock-Brokers, Vancouver, B.C.

LISTED STOCKS.

Spokane.		Bid.	Asked.
Ajax .....		.08½	.17
Alameda .....		.00½	.01
Alhambra .....		.04½	.10
Ambergrie .....		.05	.07½
Am. Comd'r .....		.00½	.01½
B. C. Copper	4.25	4.50	.02½
Black Horse .....	.01½	.02	
Bullion .....	.01	.02	
Bullwhack .....	.48	.52	
Caledonia .....	.23½	.26	
Canadian Cons.	45.00	75.00	
Carbonate Hill .....	.01½	.04	
Copper King .....	.02½	.02½	
Copper King (Che.) .....		.28	
Federal, pref.	43.00	51.00	
Federal, com.	16.00	23.00	
Gertie .....	.05	.06½	
Granby Smelter	68.00	70.00	
Happy Day .....	.01		
Hecla	2.20		
H. E. M. ....	.07½	.09½	
Hypothek .....	.02½	.02½	
Idaho Giant .....	.01½		
Idora Hill .....	.02	.02½	
International C. & C. ....	.37	.41	
Jack Walte .....	.07½	.09	
Laclede .....	.01	.03	
Lucky Calumet .....	.01½	.02½	
Lucky Jim .....	.13½	.17	
Marsh .....	.22½	.26½	
McGillivray C. & C. ....	.15	.18½	
Missoula Copper .....	.02	.02½	
Monitor .....	.04½	.02½	
Moonlight .....	.04½		
Nabob .....	.01½	.01½	
Nugget Gold Mines .....	.25	.38	
Oom Paul .....	.01	.03	
Puritan .....	.13½	.19	
Rambler-Cariboo .....	.85½	.90	
Rambler Cariboo Ext. ....	.04	.05½	
Silver Cable .....	.02½	.05½	
Snowshoe .....	.01½	.02½	
Snowstorm .....	.39	.45	
Standard S. L.	1.35	1.47	
Stanley .....	.03½	.04	
Stewart	1.92	1.97	
Tamarack Con.	1.25		
United Copper .....	.60	1.00	
Utica .....	.16	.19½	

Industrials

	Bid.	Asked.
Wash. Water Power Co. ..	133.00	136.50
Western Union Life ..	135.00	145.00
Interstate Con. Tel.	20.00	
Tamarack and Custer ..	1.01	1.26

Cobalt Stocks

	Asked.	Bid.
Balley .....	.09½	.09½
Beaver Consolidated .....	.40½	.39½
Buffalo	2.30	2.10
Chambers-Ferland .....	.29	.28½
Great Northern .....	.09	.09½
City of Cobalt .....	.39	.38½
Coniagas	9.25	9.10
Crown Reserve	3.65	2.50
Foster .....	.11	.09½
Gnifford .....	.06½	.06
Gould .....	.03½	.03½
Green Meehan .....	.01½	.01½
Hargrave .....	.08½	.08
Mc Kin. Dar. Savage	1.98	1.97
Nipissing	9.16	9.00
Ophir .....		.04
Olisse .....	.02	.01½
Peterson Lake .....	.25½	.25½
Rochester .....	.04½	.04
Right of Way .....	.08½	.08
Silver Leaf .....	.04½	.04
Temiskaming .....	.34	.33½
Trethewey .....	.34	.32½
Wettlauffer .....	.15	.15

Porcupine

	Asked	Bid
Crown Charter .....	.00½	.00½
Dome Extension .....	.06½	.06
Foley O'Brien .....		.16
Hollinger	15.50	15.15
Jupiter .....	.37	.36
North Dome .....	.60	
Pearl Lake .....	.30	.29½
Porc. Imperial .....	.02½	.02
Preston East D.04	.03½
Rea Mines15
Swastika10	.09½
Vlpond20	.19½

Sundry

C. G. F. S.05	.04½
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VANCOUVER STOCK EXCHANGE.

Listed Stocks.

	Bid.	Asked.
Dominion Trust Co.	106.00	114.00
Great West Per., A.	129.00	
International C. & C. ....	.35	.37½
Vancouver Development ..	11.00	12.00
Alberta-Canadian Oil ..		.02
Alberta Coal & Coke ..		.01½
Nugget Gold Mines ..	.23	.28
Portland Canal .....	.02½	.03½
Stewart Min. & Dev. Co. ..	.23	.30

Unlisted Stocks.

B. C. Copper	2.25	2.60
B. C. Per. Loan, A.		138.00
B. C. Trust Co.	103.00	
Granby	53.00	
Northern Crown Bank ..		90.00
National Finance		120.00
Pacific Coast Fire		126.00
Pacific Loan Co.	27.00	31.00
Canada Cons'd, M. & S.		78.00
American-Canadian Oil ..		.05
Amalgamated Dev. ....	.00½	.00½
B. C. Refining Co. ....	.47	
Can. Call Switch .....		.39
Can. Pac. Oil of B. C. ....	.03½	.05
Can. N. W. Oil .....		.00½
Coronation Gold .....	.93	.96
Glacier Creek .....	.05	
Grand Trunk Lands .....	.06	
Hudson Bay Fire	100.00	
Kootenay Gold .....	.11	.14
Lucky Jim Zinc .....	.06	.06½
McGillivray Coal .....		.16
Nicola Valley C. & C.		13.00
Rambler Cariboo .....		.40
Royal Collieries .....		.02
Snowstorm .....	.26	.32
Standard Lead	1.10	1.35
Stewart Land	6.00	
Red Cliff Min. Co. ....		.08
Western Union Fire		70.00
White Island Sulphur ..	1.10	1.50
World Building		8.00

Sales—2,000 Portland Canal at .03.

FOR SALE

Three 125-ton copper smelting furnaces. Four Cornersville blowers, capacity, 752 cubic feet per revolution, direct connected to Erie engines. Three converter stands and fourteen shells. 84 x 126, for electric drive.

Address

The Canadian Copper Company
Copper Cliff, Ontario.

THE MINING REVIVAL.

The Canadian Mining Journal states that while the London money market is disinclined to consider proposals for the financing of industrial enterprises, there is a revival of interest in Canadian mines, for which it is not difficult to secure capital. This is due in part to the excellent records of the Cobalt district and to the successful results obtained at Porcupine. The latter camp is stated to be on the verge of a big boom, the Hollinger mine being the chief cause. In this property the ore already developed above the 300-foot level amounts to \$11,000,000, while operations for 1912, the first year of production, resulted in a profit of \$600,000.

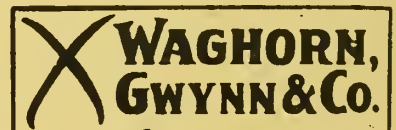
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EXECUTIVE—Russell, Prentice, Mather, Rankin.

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"BEARING" CANADIAN PROSPECTS.

Under date of the 26th inst., the Toronto Mail and Empire publishes the following timely and plain-spoken exposure of the methods which are being adopted at present, in certain financial circles, to depress Canadian securities and damage Canadian credit:

The warnings that are being issued from the other side of the border as to the risk of investment in this country, says the Mail and Empire, were started by people who believe the very opposite of what they say on the subject. Instead of regarding Canada's prosperity as honeycombed and precarious, they know that it is on the soundest and most enduring basis. The men who spread the alarm about over-expansion, speculation, etc., in Canada are endeavoring to bring about by falsehood the collapse they pretend to expect as a legitimate consequence of the country's rapid progress in wealth production. They belong to a class of Wall

Street operators who make frequent use of the calculated lie. It is by such foul tactics they carry on most of their campaigns.

Injurious Reports.

They will send abroad injurious reports, invented by themselves, as to impending trouble in the affairs of the corporations whose shares they desire to obtain at bargain prices.

Why do they give their slanderous attention to Canada? One reason is that they want to participate in this country's splendid prosperity, and, having failed to "get in at the bottom," they are trying to make a new bottom and prepare for a fresh rise. If they scare investors away from Canada and destroy confidence here they would have a chance to pick up some of the debris of the crash they are trying to engineer.

Rumor Mongering.

If they could get Canadian Pacific Railway stock and various other high-class Canadian shares at ruin prices, they would make a great haul in the years to come. Their rumor-mongering about this market is a very high tribute to the intrinsic worth of our securities. No one in Canada can suppose that these attacks on the country's financial position proceed from any other source than stock gambling cliques across the line. They are not to be attributed to ill-will or jealousy on the part of our neighbors. In fact, the United States has every reason to wish Canada well and to hope that our progress may continue without interruption for many years. Canada is the second best customer to the United States.

Fabrications.

Another object the detractors of Canada have in view is to turn to the markets in New York and Chicago as much as possible of the large currents of capital that are running to this country from Great Britain,

France and the United States itself. If by their head-shakings, their whisperings and their fabrications, they could destroy confidence in Canada, they would liberate large funds invested

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here and bound hither, and in this way make money a great deal cheaper and less inclined to give Wall Street a wide berth. They want to concentrate the spare money upon that centre of speculation once more.

Need Not Fear.

But their plot will not be at all successful. The merits of this country's economic situation are plain for any man to see. When the population flows in from the other countries at the rate of nearly half a million souls per year, when new issues of Canadian credit are bringing over a quarter of a billion dollars new capital into the country every year; when the home demand for some of our own staples is exceeding the supply; when our natural production rises into new higher records every twelve months; when the demand for more workers remains unsatisfied, there is no need for apprehension.

SANITATION IN MINES AND MINING TOWNS.

The United States Bureau of Mines is about to investigate the conditions under which a miner works, believing that the unsanitary conditions which exist in some of the mines as well as in some of the mining towns are a factor in the death rate among the men. It is intimated that these conditions not only unnecessarily cause the death of miners through disease, but they are often responsible for accidents which might not have happened if the miners were in perfect health.

The bureau has organized what is known as the mine sanitation section, in charge of J. H. White, engineer.

The bureau hopes to bring about progress by appealing to the miner, the manager, and the owner, showing that all three can assist, and how all three can be benefited by good sanitary conditions. It will reach the miner by means of illustrated lectures, moving picture exhibits and pictorial circulars. These will show how sickness and suffering are spread by careless habits, and will drive home the importance of personal and household cleanliness. The bureau will assist the managers by pointing out glaring sanitary menaces, and showing methods and costs of abatement. It will describe in bulletins common unsanitary practices and show the evils which follow in their wake. It will submit sanitary rules and regulations and show the best methods for their enforcement.

Engineer White, in talking about the conditions which exist in mining towns, said: "The mining town does not grow but is built at a single stroke. The effect of this is that the valuable lessons learned by the 'try-out' method and the profit gained by previous mistakes do not exert their powerful influence, so that the errors existing in one house exist in all; if one house is not properly lighted, none of the houses will be properly lighted; if a few houses are placed too closely together, all houses will be similarly spaced; if there is congestion in one section, there will be congestion throughout. Of course, one could have

learned from the experience of other mining towns already built, but this information was perhaps not readily available and local conditions modify each case.

"One of the first investigations which the bureau intends to take up is the house problem with a view of putting before the miners the best practices and the ones which have stood the tests of time.

"The company ownership is the most important factor entering into housing conditions. Every house reflects the standard which the operator wishes to maintain. It is difficult to stimulate personal pride among the inhabitants, and friendly rivalry is absent. However, if improvements are introduced they are far reaching and the tone of the entire town is raised, so that one house does not point the finger of scorn at its neighbor. The employer being also the landlord means as a general rule compulsory payment of rent and the importance of an assured income should be given due weight.

"In discussing the water supply situation it must be kept in mind that the town site is generally determined by the location of the mine shaft.

"The necessity and importance of a satisfactory water supply for the people who were to get out the coal was probably not given much consideration in the past; in studying conditions with a view of introducing a public water supply into a town the cost of improvements and the age of the town must be carefully balanced.

"In a limestone region pollution of the water may come from miles away which makes the potential danger of the well very great. This may involve the distribution of drinking water in bottles throughout the town, the well water being used for cooking and washing purposes only.

"The inconveniences due to the difficulty of getting water from the wells

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may be eliminated by establishing bath houses at mine shaft so that the men may wash upon coming out of the mine. These bath and change houses are being widely introduced; in a few states they are required by law. A public laundry is a great convenience for the women; lugging in several tubs of water, preliminary to doing a weeks' washing is a severe burden. Bath houses in or near the schools for the women and children are almost necessary accessories to the perfect well system. Wholesome and safe drinking water is essential to existence; its supply is one of the gravest responsibilities accompanying company ownership.

"There are few mining towns with sanitary sewer systems. Such a system presupposes a public water supply for flushing purposes. The approximate location of a mining town is determined by the mine shaft, and the topography must be accepted as it is. This is generally rough and hilly, and a single gravity system of sewers is next to impossible, as the cost of levelling off the hills and grading the streets is prohibitive. Moreover, a suitable stream to take the discharge of the sewers might not be near at hand; and the

necessity of installing a sewage disposal plant looms up.

"Mining towns possess many advantages, but the drawback lies in the fact that the initiative in maintaining sanitary and clean conditions throughout the mining town rests entirely with the operator. Indifference on his part may give rise to deplorable unsanitary conditions. The residents have no official voice in the government of the town and unofficial aggressiveness is seldom exerted because the total absence of property rights breeds irresponsibility and carelessness. Many of them are blissfully ignorant of the dangers of unsanitary surroundings, and when they protest it is the inconveniences rather than the dangers that bestir them."

METHODS OF EXPLOSIVE ANALYSIS.

"The Analysis of Black Powder and Dynamite" is the title of Bulletin No. 51 recently issued by the United States Bureau of Mines.

This bulletin outlines the methods of analysis that are used by the Bureau of Mines in the examination of certain classes of explosives. The present form of most of these methods has been worked out in the bureau's explosives laboratory. The methods employed by Prof. C. E. Munro were taken as a basis, and were elaborated to meet the demands incident to the treatment of complicated mixtures and to the development of the explosives art. A subsequent bulletin will discuss the methods of analysis of "permissible" explosives, many of the latter being of decidedly complicated character and requiring special treatment. This bulletin presents the methods of analysis of "ordinary" dynamite, and the ammonia, gelatin, low-freezing, and granular dynamites, and the common grades of black gunpowder and black blasting powder. The bulletin is published by the bureau for the information of all persons interested in explosives and their safe and efficient use in mining work.

As the term "ordinary" dynamite, though much used, has no conventional meaning, and may be used to cover a wide variety of compositions of matter, it may be noted that the standard dynamite used at the Pittsburg testing station is a good example of the "ordinary" dynamite known in this country. This testing station dynamite has the following composition:

Composition of Pittsburg Testing Station Dynamite.

	P.c.
Nitroglycerin	40
Sodium nitrate	44
Wood pulp	15
Calcium carbonate	1

As most permissible explosives contain only the constituents found generally in the various types of ordinary dynamite, the chemist will usually find it possible to analyze such explosives either wholly or partly by following the general methods of analysis here given for the type of explosive that seems most closely related to the one under examination. The methods of extrac-

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tion with ether, with water, etc., outlined in the bulletin are general methods which are applied with equal success to all classes of explosives, and therefore by the use of these general methods, following a thorough qualitative examination, little difficulty should be met except with those classes of permissible explosives that contain large amounts of salts holding water of crystallization, such as alum and magnesium sulphate, or those containing an unusual number of uncommon constituents. Even with such explosives, however, if the information desired is principally in regard to the percentages of explosive ingredients (nitroglycerin, ammonium, nitrate, etc.), the methods outlined in this bulletin may be satisfactorily followed.

IN DEFENCE OF MILITIA SERVICE.

A Farnham, Ont., despatch of the 23rd inst. says:—

"I never apologized for one dollar spent on the militia of Canada or for our young men," declared Colonel the Hon. Sam Hughes, minister of militia and defence, here this afternoon before a group of delegates of the boards of trade for the eastern townships who had tendered the minister and General Sir Ian Hamilton, with their respective staffs, a banquet.

Col. Hughes stated that he could take the militiamen of Canada and compare them man to man, mentally, morally and physically, with any other men of the Dominion of Canada, and the militiamen would come out on top.

Recent utterances by certain public men that hard times were caused by war, came in for some more strong criticisms at the hand of the minister, who said:

"It is absolute nonsense to state that hard times are caused by war. History

proves that the most brilliant periods in a nation follow times of war. The Augustinian age was the most glorious in the life of Rome. The renaissance in France followed a period of fierce strife, and the Elizabethan age in England outshone any other in the history of England.

"When a nation loses its zest for war it has reached a low stage, and Canada should bear that in mind," declared the minister in conclusion.

A SLANDERER DENOUNCED.

The Fort George Herald is a refreshing exception to the general run of newspapers in Canada, in that it has the courage to defend the fair name of the town where it makes its bread and butter against the slanderous attacks of the evil-speaking priesthood which is so disastrous a factor in our national life. In its issue of the 14th inst., our contemporary hands out the following well-deserved roast:—

The extravagant and ill-considered statement made by Rev. C. M. Wright of Fort George, in which he alluded to this fair young city as a "Gates of Hell" before the Presbyterian congress in Toronto, cannot be passed without a few words of comment.

We have had several examples of this weakness from the Rev. Mr. Wright to draw unto himself the fleeting attention of the public by methods which would indicate that he seeks reputation rather by notoriety than by more commendable actions. Once, in Vancouver, it is alleged that the Rev. Mr. Wright preached a sermon in which he left his congregation impressed with the idea that Fort George was a regular Circe of cities; a place where lust and vice walked untrammelled; where the people mocked religion and abetted wickedness and evil deeds.

Mr. Wright strives to obliterate sin from the surface. He would drive out houses of prostitution, he would close up hotel bars, and would make religion compulsory. This sort of thing has all been tried before. It gave way to an illicit liquor traffic; to the erection of foundling hospitals for misbegotten children, and to atheism.

BOURASSAISM.

At Ottawa, in the University of Toronto, and in certain sections of the Liberal press, says the Toronto News, there has been and is a sustained effort to suppress natural British sentiment and the promotion of imperial ideals amongst the Canadian people. This reactionary and injurious movement is of a piece with that carried on by Mr. Bourassa and other Quebec Nationalists. At the Federal capital we have had the surrender to Mr. Taft's reciprocity overtures—a surrender which, to say the least, revealed a marked carelessness regarding national and imperial interests. We have witnessed Sir Wilfrid Laurier's fight for a semi-neutral navy, and the refusal of a partisan senate to let Canada assume a direct share of what should be the common burden of imperial defence. We have heard Mr. Emmerson read the American Declaration of Independence, and another Liberal member ask for a Canadian Fourth of July in a jeering House of Commons.

At Toronto we have witnessed an extraordinary outbreak against employment of British professors in the Provincial University. The men behind the bizarre propaganda in Ontario and Quebec are apparently prepared to go any length to check and overcome British sentiment throughout Confederation. Mr. Bourassa himself is about to carry his evangel into the western provinces, and it is evident that the conspirators have attached to their cause all the enemies of British connection between the two seas.

The Dominion has been peopled by English, Scotch, Irish, Welsh, United Empire Loyalists and their descendants, as well as by French Canadians. Its liberties and traditions are the glorious liberties and traditions of British freemen, and the attempt of a few agitators who represent no considerable element of the population, to prevent the expression of British sentiment borders on sheer impudence. One thing is certain: The mass of Liberals, just as well as the mass of Conservatives in the English-speaking provinces, is averse to domination by Mr. Bourassa and his Toronto satellites.

HOW MANY?

How many of the senators who are so anxious to send the government back to the people could be induced to resign their own seats and submit their recent course to the judgment of the electors? More than a score of those who killed the Navy bill were rejected by the electors who knew them best when they last offered themselves to the people. How would they like to repeat the experiment?—Vancouver News-Advertiser.

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SUICIDE NOT MARTYRDOM.

While it is perhaps natural that the militant suffragettes should try and capitalize the death of Miss Davison and make her funeral an advertisement of their cause, to seriously pretend that she met her death in a noble fight for a great cause is futile. She might just as well have wound the suffrage colors about her dress and precipitated herself in front a motor car. In that case she would have hurt no one but herself, and the verdict of the jury would have been suicide while of unsound mind. Just because she threw herself in front of the King's horse in the Derby and received such injuries that she died therefrom, there is no difference in the principle. There is nothing at all noble in the militant tactics. They are carried

on simply and solely on sufferance, the sufferance that distinguishes between men and women and recognizes the difference, they placed themselves outside the pale of civilization which has gradually evolved the practice, as far as possible, that the weak must be protected from the strong. Moreover, they claim for the whole of their sex something in which only a very small and insignificant minority believe. Militancy is not a question of whether women should be above the laws. These laws may have been made by men, but on the whole they have served the purpose of protecting women from their own folly. The worst enemies of women are their own sex. It is women that prey upon women, even if they do administer to men's vices. And it is always women who throw the first stone

at a woman. Men have made laws which may not be perfect, but can be amended to suit conditions. There is no reason why those laws should be altered because a few women commit suicide. If a man did such a thing, he would be called a fool. In the case of Miss Davison, it is better to look on her as a weaker vessel suffering from hysteria.

Vancouver Daily Province.

A SLOCAN RIDDLE.

The Slocan Record gives the following riddle for those whose business takes them along the lonely highways and byways of the Slocan district, to solve: "If a person going along one of the mountain trails is treed by a she bald face, what is he to do? Send a wireless to the provincial police for a hunter's license and a rifle, or come down the tree and arbitrate with baldy and her cubs, or starve to death?"

THERE "AIN'T NONE."

Mrs. Arthur Murphy, "Janey Canuck," president of the Canadian Women's Press club, says the women of Canada carry the destiny of the country in the folds of their garments. Mrs. Murphy may be quite right about the destiny, but in regard to the folds—well, there simply "ain't none."—Regina Standard.

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Despite their anxiety to send the Government back to the people, we wonder just how many of the senators could be induced to resign their own seats, and submit their recent course to the electors to approve or to reject. What sort of vote would Senator Hewitt Bostock expect to get in Yale-Cariboo? We venture that he has little desire to try. More than a score of those who killed the Naval Bill were rejected by the electors who knew them best when they last offered themselves to the people. How would they like to repeat the experiment?—Hedley Gazette.

A PUZZLE ALL AROUND.

Joseph T. Priestly, the well-known British M.P., arriving in Montreal, declared "the senate's action on the Naval Bill puzzles the English people." He might have added that the puzzle is just as deep to all other loyal citizens of the Empire without doing violence to the facts.—Winnipeg Telegram.

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VANCOUVER, B. C.

The British Columbia Mining Exchange

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No. 7

Annual Report of Minister of Mines

(Written for the B. C. Mining Exchange by E. JACOBS)

Details of Record Ore Output of British Columbia for 1912 are Shown in Annual Report of Minister of Mines — A Complete and Valuable Work of Reference—Splendid Showing of Banner Industry of Province

Output of Mineral Products by Districts and Divisions

Name.	Divisions.			Districts.		
	1910.	1911.	1912.	1910.	1911.	1912.
Cariboo District				\$ 239,000	\$ 180,000	\$ 268,000
Cariboo Mining Division	\$ 218,000	\$ 136,000	\$ 180,000			
Quesnel "	6,000	34,000	80,000			
Omineca "	15,000	10,000	8,000			
Cassiar District				283,807	293,442	467,579
East Kootenay District				6,121,832	2,475,056	5,723,004
West Kootenay District				5,088,186	4,343,912	6,165,255
Ainsworth Division	318,058	75,768	371,760			
Slocan and Slocan City Division	845,106	798,989	1,951,315			
Nelson Division	876,002	509,265	581,700			
Trail Creek Division	2,966,096	2,891,866	3,214,751			
Other parts	82,924	68,024	45,729			
Osoyoos, Grand Forks & Greenwood divisions				6,998,519	5,621,109	8,716,406
Boundary District	6,442,063	4,763,817	7,903,006			
Similkameen, Nicola, Vernon	556,456	814,386	748,900			
Yale, Ashcroft, Kamloops		42,906	64,500			
Lillooet District				9,832	6,467	5,000
Coast Districts (Nanaimo, Alberni, Clayoquot, Quatsino, Victoria, Vancouver)				7,635,890	10,579,086	11,095,556
				\$26,377,066	\$23,499,072	\$32,440,800

This table shows the proportion of the mineral production made in each of the various districts into which the province is divided.

Progress of Mining.

The following information is from the "Annual Report." Space is not available here for reprinting all the statistical tables, but the information quoted will give a general idea of the statistics not here reproduced:

The year 1912 has proved exceedingly favorable to mining in the province, and the mineral production made therein has been the greatest in the history of its mining.

The gross value of the mineral production for 1912 was \$32,440,800; an in-

crease over that of the year 1911 of \$8,941,728, or about 33.3 per cent.

The greatest output formerly made was in 1910, amounting to \$26,377,066, which is exceeded by the production of 1912 by \$6,063,734, or 23 per cent., thus showing by comparison, even with what had been the "record year," how much the mineral production has increased during the past year.

The gradual increase in production during the past twenty-three years, and its fluctuations, are graphically shown in table X.

The tonnage of ore mined in the lode mines of the province during the year 1912 was also greater than ever before, amounting to 2,688,532 tons, exceeding the greatest tonnage formerly mined in

any year—1910—by 472,104 tons, equivalent to 21.3 per cent. increase.

As compared with the year 1911, the tonnage mined this year shows an increase of 917,777 tons, or about 52 per cent.

The tonnage mined in 1912 was produced by the various districts in about the following proportions: Boundary, 74.00 per cent.; Rossland, 9.07 per cent.; the Coast, 8.03 per cent.; Slocan, 5.07 per cent.; Nelson, 1.94 per cent.; East Kootenay, 1.87 per cent.; and all other parts of Province combined, 0.02 per cent.

The following table shows the number of mines which shipped ore during the year 1912, the districts in which they are situated, and the tonnage produced in each district, together with the number of men employed, both above ground and underground:

A GLANCE at the Contents of this issue should convince the man who handle Mining Materials and Machinery that there is no better medium for reaching the mining men than the advertising columns of this Journal

Table Showing Distribution of Shipping Mines in 1912

	Tons of Ore shipped.	No. of Mines shipping.	No. Mines shipping over 100 Tons in 1912.	Men Employed in These Mines.		
				Below.	Above.	Total.
Cassiar:						
Atlin Skeena, Queen Charlotte, and Portland Canal..	3,249	2	2	25	18	43
East Kootenay:						
Fort Steele	29,910	3	3	103	28	131
Windermere-Golden	20,400	1	1	14	15	29
West Kootenay:						
Ainsworth	32,741	8	5	105	59	164
Slocan and Slocan City.....	103,629	26	11	303	162	465
Nelson	52,323	15	11	186	108	294
Trail Creek	243,870	9	5	529	173	702
Other Divisions	451	8	1	21	10	31
Boundary:						
Grand Forks, Greenwood, and Osoyoos.....	1,989,084	11	9	635	210	845
Ashcroft-Kamloops						
Similkameen-Vernon						
Lillooet						
Coast	212,875	3	3	252	446	698
Total.....	2,688,532	86	51	2173	1229	3402

In explanation of the table it should be said that, in its preparation, a mine employing twelve men for four months is credited in the table with four men for twelve months, so that the total given is less than the actual number of individuals who worked in the mines during the year.



Group of members of American Institute of Mining Engineers, and members of Western Branch of Canadian Mining Institute, at Centre Star Mine, Rossland, during the recent meeting.

Table Showing Non-Shipping Mines and Men Employed

District	Number of Mines.			Men Employed.		
	Working.	Idle.	Total.	Below.	Above.	Total.
Coast and Cassiar.....	5	6	11	64	47	111
East Kootenay	2	.....	2	5	11	16
Ainsworth	8	8	16	55	20	75
Slocan	18	11	29	96	18	114
Nelson	8	3	11	39	16	55
Trail Creek .....	.....	4	4	.....	.....	.....
Lardeau .....	.....	1	1	.....	.....	.....
Boundary	2	18	20	30	17	47
Lillooet	2	.....	2	11	6	17
Total.....	45	51	96	300	135	435

Statistical Tables.

Referring to the tables of the mineral production of the Province, the following is a summary of their contents:

Table I. shows the total gross value of each mineral product mined in the Pro-

vince up to the end of 1912, aggregating \$430,137,522. From this table it will be seen that coal-mining has produced more than any other separate class of mining, a total of \$132,871,155; followed next in importance this year by copper at \$73,-723,562, thus relegating to third place

placer gold at \$72,194,603, and lode gold at \$70,859,022 to fourth place.

The metal gold, obtained from both placer and lode mining, amounts to a value of \$143,053,625, the greatest amount derived from any one mineral, the next important being coal, the total

gross value of which, combined with that of coke, is \$132,871,155, followed by copper at \$73,723,562, silver at \$33,863,940, and lead at \$27,520,753.

Table II. shows the value of the total production of the mines of the Province for each year from 1893 to 1912 (inclusive), during which period the output has increased about tenfold, and reached a production, for the year 1912, valued at \$32,440,800, which is about three times what it was in 1898. The year 1912 shows a gross production of \$8,941,728 greater than the previous year, and \$6,063,734, or 23 per cent., greater than the year 1910, which had previously been the record year. The value of the total products of the mines of the Province up to the end of 1912 is \$430,137,522.

Table III. gives the quantities in the customary units of measure, and the values, of the various metals or minerals which go to make up the total of the mineral production of the Province, and also, for the purposes of comparison, similar data for the two preceding years.

The table shows that there has been this year an increase in the production of placer gold of some \$129,500, and at the same time an increase in the output of lode gold of \$596,929, making a total increase of \$726,429 in the production of the metal.

The amount of silver produced was 3,132,108 oz., having a gross value of \$1,910,045, an increase in the number of ounces produced of 1,239,744, due to a greatly increased production in the Slo-can, Nelson, and Boundary districts. The gross value of the silver product this year shows an increase over that of last year of \$851,752, which is partly accounted for by a higher market price of silver during this year.

The table shows an output of lead in 1912 amounting to 44,871,454 lb., valued at \$1,805,627, which is an increase over the production of the preceding year of 17,999,057 lb. of lead.

The production of copper was 51,456,537 lb., valued at \$8,408,513, an increase in amount of 14,528,881 lb., or about 39 per cent. The value of the product was greater than that of the preceding year by \$3,836,869—an increase of 82 per cent.

Table IV. shows the proportions of the total mineral productions made in each of the various districts into which the Province is divided.

It will be noted that this year again the Coast district has the honor of first place on the list, followed, in order of importance, by the Boundary and West Kootenay districts. The Coast and East Kootenay districts owe a considerable percentage of their output to the coal-mines situated within their limits, whereas, in the other districts, the production is almost entirely from metal-mining.

The Coast district also derives a large proportion of its production from miscellaneous products, such as building materials, and due to the larger cities therein; this year this amounted to \$3,010,818, as shown in table V.

In this table, the value of zinc has been distributed to the districts produc-

ing it, which has occasioned some changes in this table as compared with the 1909 Report, thus making it differ from the column in a previous report.

Table V. is a new table, introduced last year, and is an endeavor to show in some detail the production of those products, such as building materials, previously summarized under miscellaneous products. Much difficulty has been found in obtaining reliable figures regarding these products, and in many cases they have had to be estimated; but while the figures are not as complete as desired, they are at least approximate, and show what an important branch of mineral production this has become.

Table VI. gives the statistical record of the placer mines of the Province from 1858 to 1912, and shows a total production of \$72,194,603. The output for 1912 was \$555,500, an increase, as compared with the previous year, of about 30.4 per cent.

Table VII. relates entirely to the lode mines of the Province, and shows the quantities and value of the various metals produced each year since the beginning in 1887, of such mining in the Province. The gross value of the product of these mines to date is \$205,967,277, or, including the zinc production of 1910, 1911, and 1912, \$206,604,981. The production of 1912, including zinc, was \$17,662,766, an increase over the previous year of \$6,208,703, or about 54.2 per cent., the reasons for which have already been given.

Table VIII. contains the statistics of production of the coal-mines of the Province. The total amount of coal mined to the end of 1912 is 37,250,937 tons (of 2,240 lb.), worth \$118,687,488. Of this, there was produced in 1912 some 2,628,804 tons, valued at \$9,200,814, an increase of 435,742 tons in quantity and of \$1,525,097 in value over the preceding year. In these figures of coal production, the coal used in making coke is not included, as such coal is accounted for in the figures of output of coke. The amount of coal used in making coke in 1912 was 396,905 tons, from which was made 264,333 tons of coke, having a value of \$1,585,998, an increase over the preceding year of 198,328 tons, or about 300 per cent., with an increase in value of \$1,189,968. While only 264,333 tons of coke was actually made, 267,564 was actually sold; 3,322 tons being from the stocks at the mines, and 91 tons was used under the company's boilers. The total value of the output of the collieries of the Province in 1912 was \$10,786,812.

The average selling prices taken this year in the calculation of value of product are the same as those used last year; that for coal being \$3.50 and for coke \$6 per ton of 2,240 lb. The prices used in calculations prior to 1907 were \$3 and \$5 respectively.

Table IX. gives the details of production of the metalliferous mines of the Province for the years 1909, 1910, 1911, and 1912, and the districts in which such productions were made, showing the tonnage of ore mined in each district, with its metallic contents and its market value.

The total tonnage of ore mined in the Province during the year 1912 was

2,688,532 tons, having a gross value of \$18,218,266.

The following table shows the percentages of such tonnage and values derived from the various districts of the Province:

	Per cent.
Boundary district	74.00
Trail Creek mining division....	9.07
Coast district	8.03
Slocan district	5.07
Nelson mining division.....	1.94
East Kootenay district	1.87
Other divisions	0.02
	100.00

Table X. presents in graphic form the facts shown in figures in the tables, and demonstrates to the eye the rapid growth of lode-mining in the Province, and also the fluctuations to which it has been subject.

It will be seen that, although coal-mining has been a constantly increasing industry during this whole period of twenty-three years, lode-mining did not begin, practically, until 1894, since when it has risen with remarkable rapidity, though not without interruption, until it reached, in 1906, the \$17,000,000 line, and the total production in 1910 reached the \$26,000,000 line, and this year it has reached the \$32,000,000 line.

Table XI. compares graphically the output of certain mineral products in British Columbia with that of the combined output of similar products in all the other Provinces of the Dominion, and shows that in 1912, British Columbia produced, in the minerals shown an amount equal to over 57 per cent. of all the other Canadian Provinces combined.

Coal.

The collieries of the Province made in 1912 a gross production of 3,025,709 tons (2,240 lb.) of coal, an increase over the preceding year of 727,991 tons, equivalent to an increase of 31.5 per cent.

While this comparison is true, it must in fairness be stated that the production for 1911 was much below normal, due to the labor troubles in the East Kootenay coalfield, whereby the collieries of that district were closed for the last eight months of the year.

It might be better, therefore, to make comparison with the year 1910, in which the coal production was by far the greatest in the history of coal-mining in the Province, and during which the gross coal production was 3,139,235 tons, or only 113,526 tons greater than this year.

Had it not been for labor troubles in the mines of the Canadian Collieries, on Vancouver Island, during the latter part of 1912 whereby that company's output was reduced to a point 150,000 tons lower than the preceding year, there is little doubt but that 1912 would have been the record year to date, instead of occupying, as it does, only second place; but, with the exception noted, it is greatly in advance of any other year.

The greater part of this production is still mined by three companies—the Crow's Nest Pass Coal Company of East Kootenay, the Canadian Collieries and the Western Fuel Company of Vancouver Island, which mined, collectively, 75

per cent. of the gross output, their respective production representing 31.5 per cent., 24.5 per cent., and 19 per cent. of such total.

Of the other collieries: In the Coast district, on Vancouver Island, the Pacific Coast Coal Mines, Limited, produced 151,589 tons, and the Vancouver-Nanaimo Coal Company 88,253 tons; and in the Nicola Valley section of the district, the Nicola Valley Coal and Coke Company mined 142,973 tons, the Inland Coal and Coke Company 31,300 tons, the Princeton Coal and Land Company 28,174 tons, the Diamond Vale Coal Company 3,310 tons, while the United Empire Coal Company made a start, producing some 500 tons of coal.

In East Kootenay district, in addition to the Crow's Nest Pass Coal Company, which produced 950,706 tons, the Hosmer Mines, Limited, produced 188,243 tons

and the Corbin Coal and Coke Company 122,263 tons.

In addition to those companies actually shipping, several other companies have been installing plant and have approached the shipping stage.

The collieries of the Coast district, including the Nicola Valley field, are to be credited this year with about 58.3 per cent. of the total coal output.

The gross output of the collieries for the past year was, as already stated, 3,025,709 tons, in addition to which some 17,809 tons of coal was taken from stock, making the gross amount of coal distributed 3,043,518 tons.

Of this gross amount, there was sold for consumption in Canada, 1,263,427 tons; sold for consumption in the United States, 858,981 tons; while 108,157 tons was exported to other countries, making the total coal sales for the year 2,230,565 tons of 2,240 lb.

In addition to the coal sold, there was used in the manufacture of coke 396,905 tons, all in the East Kootenay field; and used under companies' boilers, etc., 240,304 tons; while 175,744 tons was lost in washing and screening.

There was no coke made this year in the Coast district, although some 4,266 tons was sold from stock, the total coke production having been made by the Crow's Nest Pass Coal Company, and Hosmer Mines, Limited, in the East Kootenay district, in the East of coal, 264,333 tons of coke was manufactured, of which 91 tons was used under the companies' boilers.

The coke sales of the Province for the past year amounted to 267,564 tons, of which 3,322 tons was drawn from stock.

The following table indicates the markets in which the coal and coke output of the Province was sold:

Coal.	Coast District.	Crowsnest Pass District.	Total for Province.
Sold for consumption in Canada.... (Tons—2,240 lb.)	1,032,351	231,076	1,263,427
" export to United States.... "	307,239	551,742	858,981
" export to other countries... "	108,157	.....	108,157
Total coal sales.....	1,447,747	782,818	2,230,565
Coke.			
Sold for consumption in Canada.... (Tons—2,240 lb.)	4,266	213,041	217,307
" export to United States.... "	50,257	50,257
" export to other countries.. "
Total coke sales.....	4,266	263,298	267,564

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Collieries of Coast District.

The Coast collieries mined 1,764,497 tons of coal in 1912, to which was added 16,894 tons taken from stock, making 1,781,391 tons distributed from these collieries in 1912. This amount was distributed thus:

Sold as coal in Canada.....	1,032,351 tons
Sold as coal in United States	307,239 "
Sold as coal in other countries	108,157 "
Total sold as coal	1,447,747 tons
Used under companies' boilers, etc.	157,900 "
Used in making coke "
Lost in washing	175,744 "
	1,781,391
Minus coal taken from stock	16,894 "
Gross output	1,764,497 "

The total coal sales of the Coast collieries for the year show, as compared with the sales of the previous year, a decrease of 233,695 tons equivalent to 13.9 per cent.

The consumption of coal in that part of British Columbia served by the Coast collieries—partly due to the introduction of California oil-fuel—shows this year a decrease of 246,289 tons, or about 19 per cent. from the preceding year; the amount exported to the United States was 56,755 tons less, but the amount exported to other countries was increased by 69,349 tons.

Only one company in the Coast district—the Canadian Collieries, Limited—has ever made coke, and this year the ovens have not been in operation, although the company sold 4,266 tons of coke from stock, and still has 2,370 tons in stock.

The coke sold was entirely for consumption in British Columbia, no export sales having been made.

On Vancouver Island, four companies produced coal this year—the Canadian Collieries, Limited, the Western Fuel Company, the Pacific Coast Coal Mines, and the Vancouver-Nanaimo Coal Company; the majority of these companies each operate two, or more, collieries. The combined output of the Island collieries was 1,558,240 tons.

In Nicola and Princeton valleys of the Coast district, the Nicola Valley Coal and Coke Company produced 142,973 tons of coal; the Princeton Colliery, 28,174 tons; the Inland Coal and Coke Syndicate (formerly Coal Hill Syndicate), 31,300 tons; the Diamond Vale Colliery, 3,310 tons; and the United Empire, 500 tons.

The total output of this portion of the district was 206,257 tons. The Pacific Coast Colliery Company of Nicola, and the Columbia Coal and Coke Company of Coalmont, on the Tulameen river, each mined coal in development-work, but have not as yet entered the market as producers.

East Kootenay Coalfield.

In East Kootenay coalfield, the old agreement as to wages, etc., which had existed between the operators and the employees, expired on March 31st, 1911, and considerable difficulty was experi-

enced in arranging a new one, the negotiations occupying nearly eight months, during which time the collieries of this section of British Columbia and also of the adjoining portion of Alberta were shut down. The new agreement was, however, eventually signed, and holds binding until March, 1915. Regular

work began again about the first of the year, and the mines have been in operation all of the year 1912.

There were three companies operating in this district—the Crow's Nest Pass Coal Company, operating two separate collieries, the combined output of which was 950,706 tons; the Corbin Coke and Coal Company, which made an output of 122,263 tons; and the Hosmer Mines, Limited, which produced 188,243 tons of coal, making a gross output for the district for 1912 of 1,261,212 tons of coal. This gross output is nearly three times as great as the output of the previous year, when, however, the mines only worked for four months, and is within 100,000 tons of the output of 1910. In addition to the coal mined, 915 tons was taken from stock, making the amount of coal distributed from the collieries 1,262,127 tons. Of this gross tonnage, 396,905 tons was used in the manufacture of coke, of which there was produced 264,333 tons (2,240 lbs.).

In addition to the coke sold this year and the 91 tons used under the companies' boilers, 944 tons was added to stock, making the coke production for this year 264,333 tons, as compared with 66,005 tons in 1911.

Comparisons of the coal, or coke, output of this district during 1912 with the previous year are, however, misleading, as the mines were only worked for four months of that year, but the production is nearly up to that of 1910.

The following table shows the distribution made of the coal of this district:

Sold as coal in Canada	231,076 tons
Sold as coal in United States	551,742 "
Total sold as coal	782,818 tons
Used by the company in making coke	396,905 "
Used by the company under boilers	82,404 "
	1,262,127 tons
Minus coal taken from stock	915 "
Gross output	1,261,212 tons

Gold.

Placer Gold.—The production of placer gold during the past year was worth about \$555,500 as nearly as can be ascertained; great difficulty is found in obtaining reliable figures, since the work is, in many cases, carried out by indi-

viduals or unorganized groups of men who keep no books, frequently paying wages, or for supplies, in gold-dust, which, being readily transported, is scattered, and the tax imposed thereon by law is thus evaded.

The production of 1911 was the lowest recorded in seventeen years, or since 1894, but this year's output shows a decided improvement—an increase, as compared with 1911, of \$129,500—and is, in fact, the greatest production of placer gold since 1908.

As was noted in 1911, the water conditions during the latter part of the season were such as to prevent the usual "clean-ups," and it is probable that much gold, then uncollected, has been recovered this season, which would partly account for this year's higher production; all of which goes to illustrate how dependent the industry is on the weather conditions.

The known and available placer deposits are undoubtedly becoming exhausted, and, until new camps shall have been discovered, the placer-gold output may be expected to continue diminishing.

There have been reported discoveries of new placer fields in Cassiar the past season, but as yet their value has not been tested by actual workings.

Practically all the placer gold was obtained in the Atlin and Cariboo districts—the former being credited with a production of \$290,000 and the latter with \$238,000, leaving but a small balance for the remainder of the Province.

Gold from Lode-mining.—The value of the gold produced from lode-mining in the Province during the year 1912 was \$5,322,442, an increase, as compared with the previous year, of \$596,929, or about 12.6 per cent. Increases in lode-gold production have been made this year in the Boundary, due to an increased tonnage of ore mined, and in the Rossland camp, due to the higher assay value of the ore treated; the Nelson mining division about held its own this year but there has been a decreased production in the Coast district.

The following are the values of the gold product of the three most important camps: Rossland, \$2,729,949; Boundary, \$2,167,229; and Nelson, \$361,994. About 75 per cent. of the gold production of the Province is obtained from the smelting of copper-bearing ores, the remainder from stamp-milling.

The only large stamp-mill in operation in the Province is at the Nickel

Plate mine at Hedley, in the Osoyoos mining division, which, this past year, milled some 70,456 tons of ore having a value of about \$775,000. There are smaller stamp-mills operating at the Poorman, Queen, Motherlode, and other mines in the Nelson division.

Silver.

The total amount of silver produced in the Province during the year 1912 was 3,132,108 oz., valued at \$1,810,045, an increase in amount, as compared with the previous year, of 1,239,744 oz., and in value of \$851,752.

The year 1911 showed an unduly low production of silver owing to the labor troubles at the collieries shutting off the coke-supply and so closing down the smelters, so it is fairer to make a comparison with earlier years. The silver output of 1912 is the greatest we have had since 1905, and exceeds that of 1910—a normal year—by 681,867 oz. in quantity and by \$565,029 in value.

A very large proportion of the silver produced in the Province is found associated with lead-bearing ores, chiefly in the Slocan district, where a few mines are still handicapped by lack of transportation facilities owing to forest fires having destroyed the Kaslo & Slocan Railway and, in some instances, the plants of the mines.

The St. Eugene mine in East Kootenay, formerly a large producer of silver and lead, has, temporarily at least, run out of the ore-shoot, and made a very much decreased output, which was, however, partly compensated for by the reopening, by the Consolidated Company, of the Sullivan mines.

The Slocan district—including the Ainsworth, Slocan, Slocan City, and Trout Lake mining divisions—produced about 61 per cent. of the total Provincial output of silver this year, and the Fort Steele mining division about 12 per cent., all from argentiferous galena. The remainder is chiefly derived from the smelting of copper-ores carrying silver.

Lead.

The lead production of the Province for the year 1912 was 44,871,454 lb. of lead, having a market value of \$1,805,627, showing, as compared with the previous year, an increase in amount of 17,999,057 lb. of lead, or 67 per cent., and an increase in value of \$736,106, or 68.8 per cent.

This amount of lead represents the amount of metallic lead actually recovered, and paid for, by the smelters, and tallies very closely with their receipts.

Owing to the large accumulation of stock at the smelter and to certain losses in slags throughout the year, the lead-refinery during this year only produced 35,252,000 lb. of finished product.

Instead of taking account of "loss in slags," we have followed, as has been our habit, the practice of the smelters of deducting 10 per cent. from the market price of the metal, in calculating the value.

The average market price of this metal for the year 1912 was a little higher than for the previous year.

The causes militating against the output of silver even more seriously affected the production of lead; but it is expected that this trouble will be largely remedied by next year.

The lead production is this year, as usual, derived chiefly from the Fort

Steele mining division, as is shown in the following table:

Fort Steele M.D. produced	18,238,238 lb.	lead = 40.64 per cent. of total.
Ainsworth "	4,863,894 "	10.83 "
Slocan "	16,944,811 "	37.75 "
Nelson "	2,293,000 "	5.10 "
Trout Lake "	229,366 "	0.50 "
All others "	2,302,145 "	5.18 "
	44,871,454	100.00

Copper.

The amount of copper produced in the Province in 1912, smelted during the year, was 51,456,537 lb. fine copper, valued at the average New York market price for copper at \$8,408,513. These figures represent the amount of copper actually recovered, as nearly as it is possible to ascertain; the amount of copper really in the ores mined would

copper recovered, were as follows:

Boundary, 0.87 per cent.; Coast, 3.625 per cent.; and Rossland, 0.521 per cent.

Zinc.

The total quantity of zinc produced in 1912 was 5,358,280 lb., valued at \$316,139, the New York price, less 15 per cent., being taken as the basis of valuation.

This comparatively small production



Crawford Tramway System—Rambler-Cariboo Tramway, McGuigan, B. C.

be approximately 25 per cent. greater. This is the largest production of copper ever made in the Province, exceeding the previous "banner year"—1908—by 4,181,923 lb.

As compared with the year 1911, there is this year an increased production in amount of 14,528,881 lb., or nearly 31 per cent., and in value of \$3,836,869, or 84 per cent.

The following table shows the production of the various districts for the years 1909, 1910, 1911, and 1912:

District	1909.	1910.	1911.	1912.
Boundary	10,603,042 lb.	31,354,985 lb.	22,327,359 lb.	33,372,199 lb. = 64.76%
Rossland	3,509,909 "	3,577,745 "	3,429,702 "	2,539,900 " 5.03 "
Coast and Cassiar ..	1,297,722 "	3,078,090 "	11,017,872 "	15,518,181 " 30.16 "
Yale-Kamloops ..	.....	1,178 "	125,723 "	.....
Nelson	186,572 "	231,936 "	.....	26,257 " 0.05 "
	45,597,245 "	38,243,934 "	36,927,656 "	51,456,537 " 100.00 "

This output is considerably less than it was estimated would be produced,

was made chiefly by the Lucky Jim mine, in Slocan district—the only mine in the Province mining ore primarily for its zinc-contents—materially assisted by the Van-Roi, Standard, and to a lesser extent by the Noble Five mines, all in the Slocan, and by the Monarch mine, near Field, in Golden mining division, all of which produced zinc-concentrates as a by-product from the treatment of silver-lead ores.

which is accounted for by the fact that a couple of the largest producers did not market, before the close of the year, more than about half of the product actually made during the year.

The various processes designed to separate the values of the lead-zinc-silver ores of the Slocan, which have been within the past few years experimented with, have not as yet reached a stage of commercial application.

Other Minerals.

Iron-ore.—Although, undoubtedly, there are in the Province numerous iron-deposits of very considerable size and exceptionally free from injurious elements, none of these have been utilized, as there is no market for iron-ore, and consequently little development-work has been done.

In the Coast district the iron-ores are all magnetites, as far as have been developed in any quantity, and, although these sometimes contain sulphur, as pyrite, they are singularly free from other impurities.

So far as is at present known, there is no body of haematite or other ore of iron, such as would be desirable to mix with the magnetites for blast-furnace smelting.

This fact, together with the present price of coke on the Coast, of from \$7 to \$8 a ton, with little likelihood of its being less while the price of coal continues so high, does not seem to justify the expectation of an iron-smelting industry here until these conditions are altered.

Whether it will be found possible to smelt the iron-ores of the Coast with anthracite coal from the recently discovered coalfields of the upper Skeena river, it is too early to predict, until the general character of the fuel is more clearly demonstrated and proper transportation facilities to the Coast have been provided.

As to the electro-thermic smelting of such iron-ores into commercial pig-iron, the process has not as yet been sufficiently perfected, although it is looked upon as one of the possibilities of the future.

Considerable interest has been manifested during the past year in the magnetite-iron deposits of Texada and Vancouver islands, as well as other points on the Coast, with a view to their commercial utilization.

There have been reports of the intended installation of an iron-smelting plant on the Coast, but nothing at all conclusive has yet become public.

Platinum.—While platinum is found in many of the alluvial gold-workings where it can be saved as a by-product, the saving of it, in a small way, is attended with so much trouble that it has been practically neglected and no appreciable production made.

During the past year a great deal of excitement was created in the Province by reports of the finding of platinum in commercial quantity in certain dykes near Nelson. These reports were based upon statements, credited to A. Gordon French, that he had personally determined platinum, and metals of that

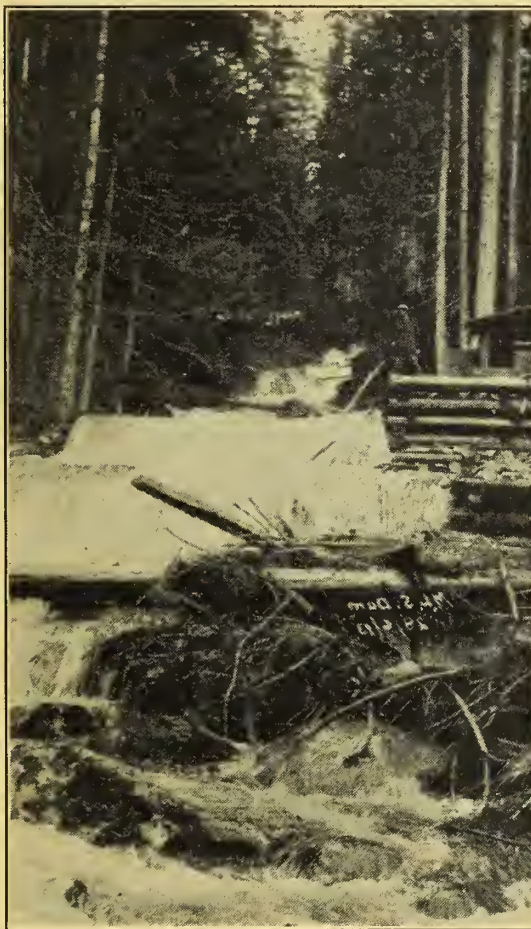
group, and found them to exist in commercial quantities in dykes in the Granite-Poorman mine and other localities adjacent to Nelson. Certain local assayers and a Philadelphia firm claimed to have confirmed Mr. French's statements. The wide publicity given to these statements by the press, and otherwise, occasioned the staking of numerous claims on dykes in that vicinity.

The importance of the discovery, if true, was recognized by this Bureau, and steps were taken to try to confirm it. In the fall of 1912 the Provincial

rival any other branch of mineral production.

The past year, although the statistical returns are not as complete as desired, a production of about \$3,435,722 is accounted for, the details of which production are given in table V.

Building-stone.—Excellent building-stone of various sorts is found in abundance in almost every part of the Province, but the fact of its widespread distribution has, however, been somewhat against the establishment of large quarrying industries, as a sufficient



Mother Lode Dam—Sheep Creek, B.C.

Mineralogist, assisted by an Inspector of Mines, sampled a number of these dykes, while samples of other dykes were obtained from the owners. These samples were all duly pulped at the Government laboratory, and identical samples sent to some half-dozen of the best-known expert chemists of Canada, the United States, and England, to be assayed for metals of the platinum group. The results received from these chemists, with one exception, have been decidedly negative, and this Bureau is not able to confirm the existence of platinum or any metals of that group in the vicinity of Nelson.

Building Materials.

The growth of cities, with the necessity for fireproof building material, has created an industry that promises to

local supply could always be obtained, and, except within reach of the larger cities, few regularly equipped quarries have been opened.

On the Coast, chiefly between Vancouver Island and the Mainland, there are several well-equipped quarries taking out granite, sandstone, and andesite, all of excellent quality. These quarries supply the stone building material of the Coast cities, and also export to the United States.

A detailed description of the more important quarries was given in the report of this Bureau for 1904.

Marble.—In the interior of the Province, the Canadian Marble and Granite Company opened a marble-quarry on the line of the Lardo-Trout Lake railway,

about eight miles from Lardo. This company has, so far, shipped only the rough blocks of the marble which were elsewhere sawn into slabs, etc., but during the past year the company has been engaged in erecting dressing-works, which are not yet in running order. The product shipped from the quarry has been small.

A coarsely crystalline whitish marble, not suitable for cutting into slabs, has been quarried on the shore of Kootenay lake, and used for building purposes in Nelson and elsewhere.

The Nootka marble quarries, on Nootka sound, on the west coast of Vancouver Island, that were opened in 1908, have not made any important shipments. The quarry has not been operated since July, 1909.

Red Brick.—The production of red brick during the past year amounts in value to \$354,500. The demand, however, keeps well ahead of even the supply, particularly in the Coast cities, so that approximately half the brick used in Vancouver is imported. The plants in the vicinity of Vancouver, besides being increased in size, are being equipped with more modern appliances and should be able to meet outside competition. The price of common brick ranged from \$8 to \$11 per thousand, according to quality and demand.

Firebrick.—The only company producing firebrick in the Province is the Clayburn Company, Limited, with a plant at Clayburn, where the beds of clay are of the age of the coal-measures. This company made approximately 2,800 M. firebrick, worth about \$56,000, and 4,000 M. front or face brick, worth about \$100,000. Besides this the company made a large number of common brick, tiles, drain-pipes, etc.

Pottery, Drain-pipe, and Tile.—The British Columbia Pottery Company at Victoria West manufactures drain and sewer pipe, chimney-tiles, etc., the chief item in their sales account being drain and sewer pipe. The output for the year approached \$130,000. The company derives its clay partly from the coal-mines of the Canadian Collieries, Limited, at Comox, and partly from a shale-quarry recently opened up on the west coast of Vancouver Island.

Lime.—The manufacture of lime is conducted in a small way at a large number of points in the Province, but only on the Coast has any attempt been made at more extensive operations. In the neighborhood of Victoria, on Esquimalt harbor, Raymond & Sons have three kilns in operation, and there are kilns on Saanich Arm. On Texada Island—in addition to the old plant at Marble bay—a new and extensive plant has been erected at Blubber bay. The limestone being used is of exceptional purity, but in some instances the limestone-beds are cut by igneous dykes which have to be rejected, and this somewhat increases the costs of quarrying.

Portland Cement.—The only company manufacturing cement in the Province is the Vancouver Portland Cement Company, with works at Tod Inlet, on the Saanich arm, about twelve miles from Victoria. The capacity of these works

at present is from 2,000 to 2,500 barrels a day, and this past year the company manufactured over 520,000 barrels of cement, valued in the neighborhood of \$800,000. The raw materials, limestone and clay, are quarried on the company's property adjoining the works. The company has doubled the capacity, of the plant, installing electric power to take the place of, or supplement, the steam plant, and introducing many labor-saving appliances.

The Portland Cement and Construction Company has been installing a large plant at the head of the Saanich arm, but production has not yet been begun.

Another company has erected buildings and is putting in plant at East Princeton, Similkameen.

It is understood that a company has secured land and suitable deposits in the vicinity of Prince Rupert, and that the construction of a large plant will be begun in the near future.

Crushed Rock and Gravel.—Concrete construction has become so extensive on the Coast that companies have been formed to supply suitable material for such work. Near Vancouver harbor four companies have opened quarries in a granite rock, and have erected crushing and sizing plants and bins for the manufacture of crushed rock for concrete-making and for road-making in Vancouver. The output of these stone quarrying and crushing plants, in the vicinity of Vancouver alone, amounted last year to \$275,000.

Near Vancouver and Victoria, companies have been formed for supplying washed sand and gravel, properly screened to size; at least some of those companies have installed a system of mining the gravel by hydraulic streams and the carrying of the product to the screens by the water used. The value of the sand and gravel produced for use in these two cities amounted during the past year to over \$382,310.

SUMMARY REVIEW OF MINISTER OF MINES REPORT.

(Prepared for the B. C. Mining Exchange by E. Jacobs.)

The Annual Report, for 1912, of the Minister of Mines for British Columbia, recently issued, gives, generally, a comprehensive account of the mining industry of the Province during the year it covers. The information given fills about 35 more pages than that for 1911.

The report shows that the total value of the mineral production in 1912 was \$32,440,800, as compared with \$23,499,072 in 1911 and \$26,377,066 in 1910. A comparison with the last mentioned year rather than with 1911 will be a fairer one, for the production of the immediately preceding year was adversely affected by labor difficulties at Crow's Nest district coal mines, which lasted about eight months and caused a lessening of the output of minerals, while in 1910 conditions were generally normal. The comparison, therefore, shows that

the value of production in 1912 was \$6,063,734, or 23 per cent. greater than in 1910.

In January the Department published a "Preliminary Review and Estimate of Mineral Production" for 1912, in which the estimate of the Provincial Mineralogist, Mr. Wm. Fleet Robertson, was that the total value of the mineral products was \$32,606,000. The revised figures show that this estimate was \$165,200 in excess of the actual value of the production, as afterward definitely ascertained—a quite small amount in comparison with the total, and an evidence of the care taken in endeavoring to ascertain the approximate position before the customary returns had been received from the producing mines. There were variations in totals of value of separate mineral products, the chief of which were an under-estimate of that of gold by about \$417,000, and an over-estimate of that of building materials, etc., by rather more than \$814,000. However, the total value as eventually determined, was so near to that given in the preliminary estimate, that the usefulness of having the latter prepared immediately after the close of the year to which it related, and made available for the information of the public, as had also been done in regard to the mineral production of 1911 and 1910, respectively, was again effectually demonstrated.

It is noteworthy that the aggregate value of the mineral production of British Columbia for all years to 1912, inclusive, is \$430,137,522, of which \$143,053,625 was for gold (placer and lode); \$132,871,155 for coal and coke; \$73,723,562 for copper; \$62,913,096 for silver, lead, zinc, etc., and \$17,576,084 for structural materials, etc.

Comparing the value of the production of the several districts in 1912 with that for 1910, it is seen that the only decrease worth noting was in East Kootenay, of nearly \$400,000. The largest increase was in the Coast district, which, however, made a gain of only \$516,500 as compared with 1911, in which year labor difficulties did not affect this district as they did the Kootenays and Boundary; the increase in 1912 as compared with 1910 was \$3,459,666. The increase made by West Kootenay district came from Ainsworth and Slocan in largest amount (about \$1,160,000) and Trail Creek division in smallest (\$249,000), against which there was a loss of \$294,000 in Nelson division and \$38,000 in other parts; the net gain for the district was \$1,077,069. Of Boundary district's gain of nearly \$1,718,000, about \$1,459,000 was in the value of copper produced. More than half of the gain made in the Coast district was also in copper and the remainder in structural materials.

An examination of the several tables exhibiting the yearly totals of placer gold, lode metals, and coal and coke, respectively, will show that the total for placer gold was in 1912 the highest for four years; that for lode gold second only to 1910 in all years; that for silver the highest since 1906; that for lead higher than any preceding year since 1907; while the total value of copper constitutes the highest on record in the history of mining this metal in the Province. For coal and coke the 1912 fig-

ures are the highest yet recorded excepting only for the year 1910, when the total for these minerals was nearly \$322,000 higher. There was, though, labor trouble at some of the Vancouver coal mines during the last three months of 1912, which unfavorably affected production of coal there.

The total quantity of ore mined in 1912 was 2,688,532 tons, which was 472,104 tons more than in any other year, equivalent to an increase of 21.3 per cent. over the tonnage of 1910, previously the highest year. The percentage of production was as follows: Boundary, 74 per cent.; Rossland, 9.07 per cent.; Coast, 8.03 per cent.; Slocan, 5.07 per cent.; Nelson, 1.94 per cent.; East Kootenay, 1.87 per cent.; all other parts of the province, 0.02 per cent. Taking the Province as a whole, there was 790 tons of ore mined during the year for each of the 3,402 men employed in and about the shipping metal mines. The quantities ranged, in connection with divisions

The coal statistics show a production of 3,025,709 long tons of coal, gross. Deducting 396,905 tons made into coke, the net production was 2,628,804 tons. There was 264,333 tons of coke made—the largest quantity for any year excepting 1905 when the output was 271,785 tons. Value of coal and coke in 1912 was \$10,786,812, as against \$11,108,335 in 1910, the latter being the highest in all years. A summary of gross production follows: Vancouver Island, 1,558,208 tons; Queen Charlotte Islands, 32 tons; Nicola Valley, 177,583 tons; Similkameen, 28,674 tons; Crow's Nest, 1,261,212 tons; total, 3,025,709 tons.

A brief summary will indicate where the bulk of the metals mined in 1912 was produced. Of \$555,500 in placer gold, Cariboo yielded \$230,000, Atlin \$290,000 and other parts \$35,500. Of lode gold \$5,322,442, Rossland produced more than one-half, or nearly \$2,730,000; Boundary district mines (including \$748,133 from the Nickel Plate Group,

eral reports and compilations by the Provincial Mineralogist; and an illustrated report, by Mr. C. F. J. Galloway on the "Coal Measures of the Peace River Canyon." Among subjects of interest concerning which there is information are the following: Reports of the Provincial Mineralogist and Mr. George Watkin Evans on the Groundhog coal field; that of the Provincial Mineralogist on his former investigations in connection with the reported finding of platinum and metals of that group in certain dikes in the vicinity of Nelson; several short reports on field work by the Provincial Assayer; on Dease Lake district, by the Provincial Mineralogist, and a comprehensive review of coal mining in the Province by the same official. Another feature is the lengthy and comprehensive report of the Chief Inspector of Mines (Mr. Thos. Graham) who took office on January 1, 1912, in which are included a review of accidents in coal mines,



Looking Down North Fork Sheep Creek from the Divide.

or districts that produced more than 50,000 tons in the year, from 2,354 tons a man in Boundary district down to 178 tons in Nelson district.

There were 86 mines that shipped ore in 1912 (51 of them more than 100 tons each), and there were employed in these a total of 3,402 men—1,229 above and 2,173 below ground. The non-shipping mines numbered 96, of which 51 were idle and 45 working; in the latter 435 men were employed—135 above and 300 below ground. The total number employed at metalliferous mines was, therefore, 3,837. The coal mines gave employment to a total of 7,130, this number including 221 boys among the 6,391 whites, and the following in other classes of labor: Japanese 117, and Chinese 622. The number employed underground was 5,275, of which 4,952 were whites and only 323 of other races. The foregoing figures show that there were employed at metalliferous mines 3,837, and at coal mines 7,130; total, 10,967. It may be taken for granted that men engaged in prospecting were not included, and probably the figures omit as well men employed at smelting works, but of this there is no mention.

near Hedley), \$2,167,000; Nelson division \$362,000; the Coast nearly \$52,000, and about \$11,000 from other parts. Of \$1,810,945 for silver, Slocan and Ainsworth mines are credited with \$1,132,000; Boundary, \$225,000; East Kootenay \$222,000; Nelson, \$95,000; the Coast, about \$61,000; Rossland, \$50,000, and Lardeau, \$25,000. Of \$1,805,627 for lead, Ainsworth and Slocan contributed \$887,000; East Kootenay, \$824,000; Nelson, \$92,000; Lardeau, \$9,000, and a small quantity from Portland Canal. Of \$8,408,513 for copper, Boundary produced \$5,453,000; the Coast, \$2,536,000; Rossland, \$415,000, and Nelson \$4,300. The distribution of \$316,139 for zinc was about \$308,000 from Slocan mines and \$8,000 from Northeast Kootenay.

In addition to much interesting and valuable comment by the Provincial Mineralogist, under the head of "Progress of Mining," there are other features of the Report that are noteworthy. These include the reports of the Provincial Assayer and of the Secretary of the Board of Examiners for Coal Mine Officials, respectively; those of the Gold Commissioners for the more important of the mining districts; the sev-

mine rescue work, first-aid to the injured, metalliferous mine accidents, an account of attendance at the Fourth Annual Convention of the Mine Inspectors' Institute of the United States of America, held last summer at Columbus, Ohio, and a report on an explosion at the Diamond Vale coal mine in March, 1912. The several reports of the District Inspectors of Mines are also of value.

Reproductions of photographic views are numerous in the report, many of the half-tones being excellent, and well printed. Zinc-line cuts and lithographs are also used for purposes of illustration. Among these is a sketch drawn by Mr. Harold T. Nation, of the Provincial Mineralogist's office.

A full index makes the report complete. Generally this publication is well up to the high standard reached in other recent years, and is a really useful book of reference, reflecting credit on the Hon. the Minister of Mines, the Provincial Mineralogist, who did the chief work in its preparation, and on the British Columbia Government printing office for its excellent printing and presswork.

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THE TWELFTH INTERNATIONAL GEOLOGICAL CONGRESS.

The following information relative to the Twelfth International Geological Congress is reprinted from the Canadian Mining Journal of Toronto, which published other particulars as well. The excerpts made from the Journal's lengthy article will, doubtless, serve to give readers of the B. C. Mining Exchange a fairly good idea of the importance of the gathering arranged to be held in Toronto, Ontario, in August, and the excursions to Western Canada to follow:

The Twelfth International Geological Congress, which is to be held in Canada this year, gives promise of being a marked success. The governments of twenty-five different countries have signified their intention of sending official delegates, and various scientific institutions in thirty-eight countries will be represented. The membership already is about 800, consisting of leading geologists and mining engineers of the whole civilized world.

The session of the Congress will be held in Toronto on August 7 to 14 inclusive, during which papers of great general geological interest will be read and discussed. The most attractive feature, however, is the opportunity that will be afforded to visit the leading mining districts and points of greatest geological interest in the country. To this end a great number of excursions have been arranged for.

Arrangements for the Session in Canada.

The Congress visits Canada this year on the invitation of the Government of Canada, transmitted through the Foreign office and through the British Ambassador in Sweden. It was supported at the Stockholm session by Dr. W. G. Miller, for the Province of Ontario, and Dr. Frank D. Adams, who represented on that occasion the Government of Canada.

On December 2, 1910, an inaugural meeting was held in Toronto. It was called at the instance of the general secretary, Mr. R. W. Brock, acting for the Dominion Government as the Director of the Geological Survey. At it were present representatives of the Institutions which had invited the Congress to be present in Canada and a small executive committee was appointed with instructions to appoint such other committees as might be required as and when they were required.

Committees dealing with the following subjects were appointed: Organization, coal resources, editorials, excursions, finance, leaders of discussions, official invitations, patronage, publications, qualifications for membership, Toronto local, transportation, and a committee to appoint an assistant secretary. Some of these committees have completed their work and have been dissolved, but most of these are still active and consist of one or two members of the executive committee with in some cases other gentlemen, but in each case they report direct to the executive committee which makes itself responsible for the financial arrangements.

Preparations were made for publication of a monograph on the "Coal Resources of the World" to consist of 1200 pages published in three volumes accompanied by an atlas of 70 maps. The work has been accomplished under the editorship of Messrs. William McInnes and D. B. Dowling, of the Geological Survey of Canada, and is a credit to them and the country.

The excursions will, no doubt, be the leading feature of the Congress and every effort is being made to make them attractive both to geologists and mining engineers. The itineraries of the excursions are contained in circulars distributed by the secretary. The guide books consist of fifteen volumes comprising a total of more than 1,600 pages and 140 maps.

The preparation of guide books for use on excursions has proven to be one

of the most useful features of the sessions. By this means a great deal of information concerning the structural geology and ore deposits of the countries visited has been made available. The set of guide books prepared for the Canadian meeting covers practically all through railway lines and steamboat routes from Sydney in Cape Breton to Dawson in Yukon. They consist in all of 1,600 pages, contain well arranged notes, are of convenient size, are accompanied by geologically colored maps and sections and make a notable contribution to the literature treating of the geology of the country. Their attractive appearance, the fine quality of the material entering into their make up, and the excellent topography reflect great credit upon the Government Printing Bureau by whom the printing was done.

Object and Work.

Geology is defined as the science treating of the earth's history, and it includes the study of its mineral deposits and the floras and faunas which have successively clothed and peopled the earth's surface. The direct value of geological work is now fully recognized, especially by those connected with mining, civil and hydraulic engineering, it being daily applied not only to mining problems, but to many others, such as water supplies, foundations for bridges and large buildings, dams, road construction, etc. In fact, in the recognition of the commercial importance of geology there is danger that some branches of the science may be overlooked or slighted. It is well, therefore to point out that in many cases the application of geology to engineering and commercial work has been made possible only by the study of problems which appear to be solely of scientific interest. The International Geological Congress takes care that all aspects of geology receive adequate consideration in its sessions.

The object of the International Geological Congress is, briefly, the ad-

vancement of knowledge concerning the earth, both in the field of pure geological science and in its application to the arts and industries, through the association and co-operation of leading geologists and engineers of all nations.

The more important methods by which it endeavors to accomplish its aim are as follows:

Meetings, publications, international committees, excursions and prizes.

Meetings.—The meetings are held every three years in different countries, and each session lasts from seven to ten days. The meetings are attended by members from every civilized country. The leading countries, societies and universities are represented by specially appointed delegates. Papers bearing on questions of general interest are read and discussed. As main topics for discussion subjects of scientific or economic importance are selected in advance so that every member who can contribute knowledge on the subject may be prepared to do so. In this way, the exact state of present knowledge on these topics is put forth and made known.

Publications.—The transactions of the Congress are published as soon after the session as possible. They contain the more important papers and discussions, and a general report on the business and work of the Congress. The transactions of the eleventh Congress form two volumes totalling 1,413 pages. In addition, a quarto volume of papers on "Changes of Climate since the Maximum of the Last Period of Glaciation," and two quarto volumes and a large atlas on "The Iron Ore Resources of the World" stand to the credit of the eleventh Congress.

International Committees.—Committees are formed to deal with questions requiring international or concerted action.

Such subjects as the standardization of geological colors and signs employed on maps, the standardization of geological nomenclature, and the planning of general geological maps covering an entire continent have been dealt with by these committees.

Excursions.—Excursions have become an outstanding feature of the sessions, special facilities being provided in the country in which the meeting is held to enable the delegates coming from every portion of the world to make, at small expense and under expert guidance, a personal study of its geological structure and mineral resources.

The value of the excursions is not confined to what is seen and learned. They afford the best opportunity for the members to fraternize and become acquainted with each other and with each other's work and ideas. The informal discussions of the geological problems presented in the field and the information that is thus brought out concerning the methods employed in the various parts of the world in attacking and solving similar problems; and the use that has been found for neglected or little-known substances; these and similar discussions are perhaps the most instructive and valuable features of the Congress.

Prizes.—The Congress affords the necessary machinery for awarding

prizes for special achievement in the science or application of geology. The Spondiarow prize, founded by a Mr. Spondiarow of St. Petersburg, Russia, in memory of his son, is awarded at each session for the most important work accomplished by an individual since the preceding session. Special prizes have been awarded at various sessions.

Value of the Congress.

From even such a brief recital of the object and work of the Congress, its importance is evident, but a few other points may be touched upon. It has secured the co-operation of the governments of various countries, as well as of men of science that has resulted in the magnificent geological map of Europe now approaching completion. A similar geological map of the whole world will be undertaken. As an example of valuable international studies may be mentioned the very careful investigation into the iron ore resources of the world, the results of which are embodied in a series of magnificent volumes, in which the extent, quality and mode of occurrence of the iron ore resources of every country of the world are set forth, and illustrated by means of maps and plans. A similar plan of study is now in progress to determine the coal resources of the world, a full report of which will be issued in 1913 before the meeting of the Congress in Canada. The Congress serves, in a sense, as an international clearing house for geology. These great gatherings of distinguished scholars of all nationalities have aroused greater interest in geology on the part of private individuals, corporations and governments, giving it a higher standing as a science, and rendered possible its increased economic application.

The country entertaining the Congress is repaid in many ways. The excursions are participated in by the more eminent geologists and mining engineers of the world, giving them a knowledge of its resources and possibilities, which they spread abroad, for they are the advisers of Capital; the writers of text books and authoritative articles; and the instructors in universities and schools. Their criticisms and suggestions based upon their experience with similar problems and conditions in other parts of the world are helpful and stimulating to the home geologists and mining engineers. After leaving any country they have learned where to obtain reliable information concerning it and they follow its developments and discoveries as announced in the press and technical papers.

Character of Attendance.

Geologists from every quarter of the globe attend the Congress. The word "International" in the title was well chosen and the character of the attendance at each Congress has been remarkable for the number of different nationalities represented. As to the personnel of the members, they may be broadly classed in three divisions.

1st. Professors and teachers from the leading colleges and universities as well as the technical mining schools.

2nd. Officers of government geological surveys or equivalent organizations.

3rd. Geologists and mining engineers in private practice.

Visit to B. C. Coast.

Two excursions of Congress delegates and members to Western Canada have been arranged. Both are to leave Toronto on the evening of Thursday, August 14. That officially known as C2, which at last advices received by the secretary of the local committee at Victoria had about 100 names on its list, is scheduled to arrive in Vancouver at 1.50 a.m. of Monday, August 25, and to leave for Victoria by steamer sailing at 10 o'clock the same morning. This party will return to Vancouver on August 27, arriving at 7 o'clock a.m. and, after having spent the morning in this city, will go by train leaving for the East at 12 o'clock noon.

Excursion C1, numbering about 115, will arrive in Vancouver at half-past eight o'clock in the evening of Monday, August 25, and take the night steamer for Victoria, reaching the latter city at 7 o'clock in the morning of Tuesday 26th. Both parties will spend the 26th in Victoria, for which day special arrangements are being made for their entertainment. The C1 party will leave Victoria at midnight of 27th and arrive in Vancouver early on Thursday morning, 28th. Those who are not going north will leave for the East at midnight of Thursday. The C.P.R. steamer *Maquina* has been engaged to make a special trip with some of the original C2 party, going from Vancouver to Prince Rupert, Juneau, Skagway, and the Malaspina glacier. Those who intend visiting the Yukon will reach Dawson on Thursday, September 11, and Skagway on the return trip on September 18.

There will be provision made for those members who elect to visit Kootenay, Boundary and Similkameen, several side trips having been arranged on a schedule which will allow of those taking them reaching Victoria for the rendezvous there on August 26.

Those in charge of C1 will be: Leader, Dr. F. D. Adams; associate leader, J. B. Tyrrell; secretary, J. McLeish; assistant secretary, H. S. de Schmid. Those for C2 will be: Leader, R. W. Brock; associate leader, Jas. McEvoy; secretary, H. E. T. Haultain; assistant secretary, H. Frechette.

While it is not practicable at present to give the exact number of excursionists from each country, the following is approximately correct: From Argentine, 1; Austria, 4; Belgium, 3; Canada, 70; Chili, 1; Denmark, 1; Egypt, 1; France, 10; Germany, 23; Hungary, 1; India, 3; Indo-China, 2; Italy, 6; Manchuria, 1; Netherlands, 2; Newfoundland, 1; Russia, 7; Sweden 6; United Kingdom—England, 11; Ireland, 1; Scotland, 9; total 21, United States, about 40; not stated, 12.

The arrangements are largely in the hands of members of the Geological Survey of Canada, but local committees have been formed to assist in the entertainment of the visitors at most of the more important places to be visited. At Victoria, the chairman of the local committee is Mr. Wm. Fleet Robinson, provincial mineralogist, and the secretary, Mr. E. Jacobs, secretary of the Western Branch of the Canadian Mining Institute at Vancouver. Mr. Pilling, secretary of the Vancouver Chamber of Mines, is local secretary.

Provincial Mining News

Compiled for B. C. Mining Exchange
by E. JACOBS.

SLOCAN.

Slocan City.

Work is being continued at the Ellis Silver Mining Co.'s Eastmont mine, on Ten-mile creek. Little, if anything, is being done at the Enterprise.

G. B. Webster is working on the Neepawa under lease. At the Meteor fresh arrangements are pending for work, the lease under which this property has been operating having expired. J. C. Moen still has a crew of men on the Black Prince. The Lily B. is idle, the Mabry syndicate, of Spokane, having stopped work there.

Geo. Long is foreman at the Ottawa, where the Consolidated Mining and Smelting Co. has 15 men doing develop-

ment work, which consists of extending the tunnel, making raises, and driving crosscuts in various parts of the mine.

has been got in to assist in the search for more ore. Meanwhile the concentrating mill has been closed until enough ore shall be obtained to warrant its being run again. Adjustments are being made at the newly-installed concentrating plant of the Silverton Mines, Ltd., which company is also driving a low-level tunnel on its Hewitt-Lorna Doone group of claims. The Consolidated Mining and Smelting Co. is doing development work on the Lucky Thought, which it is working under option of purchase. The B. C. Copper Co. has resumed work on the L. H. group.

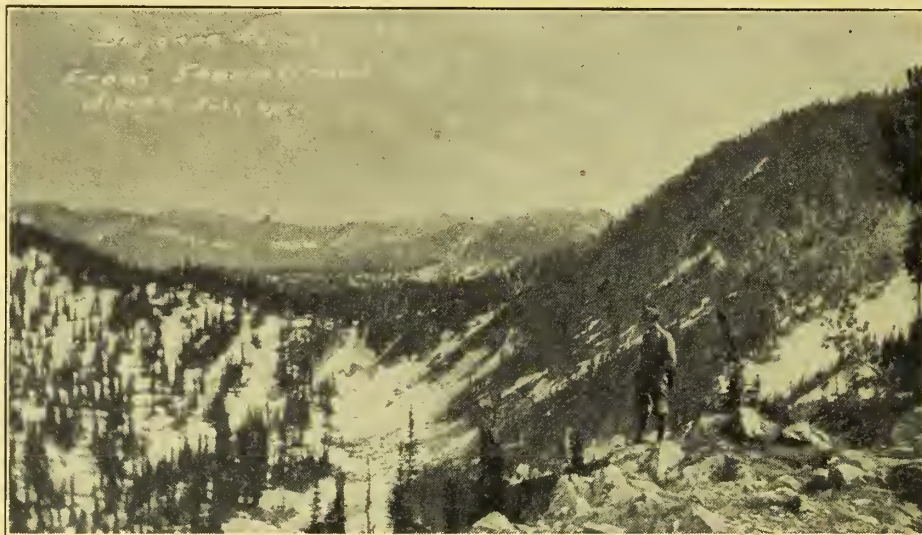
Cody.

The Noble Five company is both drifting and stoping ore on the Noble Five No. 4 level, and a raise has been made from that level to the same level as that of Surprise No. 4. A "stringer" giving up to eight inches of carbonate ore with some high-grade galena is being followed below B level of the Noble Five. The company is also drifting on

nor is it expected that operations will be resumed on those properties this summer.

Sandon.

In the immediate vicinity of Sandon three groups of mines are being worked, namely, the Slocan Star, Ruth-Hope, and Richmond-Eureka. All three are being developed to increase ore-production, which has been smaller recently than in earlier years. A cross-cut adit has been driven more than 2000 ft. to the Slocan Star vein, and then a drift was run in the vein which, however, was not found to contain much shipping ore in the part opened by this drift. A raise to the old workings, about 600 ft. on the dip of the vein, exposed ore of good grade before reaching the old sixth level, and the dip of this ore having been ascertained crosscuts from the raise to the ore body are being made at intervals between the low-level adit and the old workings. Shipment to the smelter of clean galena will be made



The Bayonne Range, from Sheep Creek, B. C.

ment work, which consists of extending the tunnel, making raises, and driving crosscuts in various parts of the mine.

The liquidator of the Arlington Mines, Ltd., has been inviting tenders for the purchase of machinery and plant on this property.

New Denver.

Preparations are being made to drive a lower adit on the Apex, from which a few railway carloads of ore were taken last year. The owner of the Capella, from which some very high-grade silver ore has been obtained in past years, has made application for a water right to enable him to ground-sluice off a lot of wash and thus facilitate finding small veins of rich ore believed to occur on this claim.

Silverton.

Production of silver-lead ore and concentrate, and of silver-zinc concentrate, is being continued at the Standard mine and mill. Not much mining is being done at the Van-Roi, but a diamond-drill

the vein in Nos. 2 and 3 levels of its adjoining Deadman claim, and is raising from No. 2 to No. 3. Other work is stoping some ore from between Nos. 1 and 2. The aerial tramway has been put in running order and will be used to convey ore down to the mill in the valley below, for hauling thence to the railway at Sandon. There is some ore in the Deadman mine running high in both silver and zinc, but it is not intended to ship this for the present; production for shipment will probably be restricted to silver-lead ore for a while.

Development of the Surprise mine is being continued. A few men are working under a lease on one of the small high-grade silver-bearing veins of the Reco, and others on the neighboring Dunedin claim, from which a small quantity of rich silver-lead ore is being taken. Supplies have been taken in the Mountain Con, on which work will shortly be resumed. Now that the snow has melted the Colonial is to be worked again. Neither at the Noonday nor the Sunset is there any work being done,

as development shall be advanced, but it is unlikely much concentrating ore will be mined yet, since it is not intended to operate the concentrating mill this season. The outlook for the mine is favorable, and preparations are being made for increasing production as stoping faces shall be opened. On the Richmond-Eureka 16 to 18 men are employed and 80 to 90 tons of silver-lead ore is being shipped monthly to the Trall smelter. The Ruth-Hope concentrating plant is not running just now, but the mine is being developed in a direction in which it is expected ore will be found.

The Wonderful mine is being worked under lease and bond, and recently the first lead ore ever found in place on the property was encountered. A vein, 4 ft. 6 in. in width, has been found at 310 ft. below the surface, and bunches of ore occur in it. In 1896-1898 much ore was found on the surface, but none in place, though about 4000 ft. of work was done exploring for the vein. Under the management of E. J. Fields, now of

Spokane, Wash., a lot of ore was recovered by ground-sluicing. Reports variously place the quantity at 400 to 600 tons, and official records give the smaller quantity with metal contents ranging from 113 to 133 oz. silver to the ton and 70 to 76 per cent. of lead.

Three Forks.

Recently obtained information concerning the Rambler-Cariboo silver-lead mine, in McGuigan basin, is as follows: On the 1400-ft. level, which crosscuts the vein at about 4500 ft., from the portal, the south drift has been advanced about 400 ft. Clean galena ore, 16 to 18 in. wide, was encountered at 200 ft. from the crosscut, and this ore shoot continued for 60 ft. The face of the drift is in about 4 ft. of zinc ore. A raise from this level to the 1200, 230 ft. above, is being made, starting from 60 ft. back from the face of the drift. About half way up No. 13 level has been opened by drifting 100 ft. south and quite recently running north. Both the raise and the north drift are in good ore. Timbers have been put in and a stope started in the north drift, and from two to four feet of clean galena is being stoped out here. No. 12 level has been extended south and this lately ran into ore. The position is similar on No. 10 level. Stoping is being done on Nos. 8, 9, and 10, all south from the main raise. The monthly output of clean ore being sent crude to the smeltery is five to six cars, besides which from 10 to 15 tons of silver-lead concentrate a day is being made by the mill. Both the aerial tramway from mine to mill and the concentrating plant are running smoothly and doing excellent work. Some additions are being made to the mill plant to provide for saving the zinc in the ore. The zinc is associated with iron to such an extent that there is difficulty in saving the zinc with the appliances now in use.

The annual meeting of the Soho Consolidated Mines, Ltd., was held recently in Spokane, Washington. The directors elected and officers appointed were: Dr. J. N. Gunning, Spokane, president; Fred. H. Green, Portland, Oregon, vice-president; John R. Cassin, Spokane, secretary-treasurer; James Neilson and J. C. Ryan, Spokane; Arthur F. Lewis, Lewiston, Idaho; and W. P. Hill, Harrington, Washington. Wm. Hittell Sherzer, geologist, of Ypsilanti, Michigan, who last year spent three weeks on the com-

pany's group of mineral claims in Slocan district, and obtained Crown-grants for the property, submitted a report in which he mentioned that 3441 ft. of development work had been done on the group. He also commented favorably on the fact that the claims are adjoining the Rambler-Cariboo, one of the best known mines in the district, veins on which contain much silver-lead ore believed to continue into the Soho property.

Ore from the Panama mine, situated high up the mountain above Fish lake, on the divide between Slocan and Ainsworth mining divisions, is being brought down by a 12-horse pack-train for shipment by rail, via Three Forks and Slocan lake, to the smeltery at Trail. During the winter and early spring some 2000 sacks were filled with ore and made ready for shipment. Sacking ore, which is a dry silver ore, is being continued.

Following the recent death of the late Thos. G. Procter, who was managing director of the Lucky Jim Zinc Mines, Ltd., operations at the Lucky Jim mine, at Bear lake, have been suspended.

Whitewater.

W. B. Smith, of Kaslo, who has a lease and bond on the U. S. claim, situated at the extreme head of Jackson basin, is having silver-lead ore packed down from that property to the end of the wagon-road near the Jackson mine, five or six miles from Whitewater. He had about ten tons stacked alongside the road early in July.

The Charleston above Whitewater, is under lease to A. J. Harris and John Chisholm, who are crosscutting to the vein.

Last winter J. L. Retallack & Co. extended the No. 7 drift of the Whitewater group of mines about 300 ft., this making the total length of the adit approximately 2000 ft. which is 500 to 600 ft. farther into the hill than any other level in the Whitewater mine. Lately making a three-compartment raise from No. 7 to the surface 800 ft. above was commenced, and to facilitate this work a hoist has been placed on No. 7 level and an air-pipe brought in to supply power for hoist and two machine drills that are being used in raising. No. 10 level is also being extended, and since a start

was made last spring a distance of 400 ft. has been driven, making the total length of the adit 2400 ft. and carrying this working into Whitewater Deep ground. One machine drill is in use on this level. On No. 12 about 300 ft. of work has been done in recent months, crosscutting and raising, and on No. 13 some 400 ft. of similar work. On No. 14, which is the main adit level of the mine of the Deep Mine, Ltd., some 300 ft. of driving has been done, carrying the face of this adit to approximately 2300 ft. from the portal. Five cars of ore have been shipped to Trail, this being practically the production of last winter. Between No. 7 and No. 9 1-2 levels "black" ore, containing silver and lead, is being mined and shipped at the rate of 100 to 120 tons a month.

NELSON.

In connection with the investigations and experiments made during the last two years by the Mines Branch of the Canada Department of Mines, under the direction of Dr. Eugene Haanel, and other matters brought to the attention of the Dominion Government, the following information has been published at Nelson:

"Dr. Haanel makes the following statement: 'A commencement has been made regarding the request of the Associated Boards of Trade of Eastern British Columbia by the establishment of our ore-dressing laboratory. I am strongly in favor of the establishment, in connection with the ore-dressing plant, of a well-equipped metallurgical plant, as our metallurgical investigations are being conducted at present for the Mines Branch at McGill and Queens Universities. This is very unsatisfactory as it is impossible, on account of the distance, to give the operations at those universities the proper supervision. With reference to the second point, namely, the advisability and need of appointing a Royal Commission to enquire into the conditions affecting the zinc and lead mining industries, I would say that, at present, I have not sufficient information in my office to offer an opinion. I have, therefore, instructed Dr. A. W. G. Wilson, a member of my staff, who will shortly be in British Columbia, to make an investigation regarding this matter and report to me. On his return I shall be in a position to offer an opinion.'"

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SKEENA CROSSING, B.C.

Salmo.

Informations have been laid against twelve residents of Salmo, charging them with assault and intimidation, and a summons to appear in the provincial court at Nelson has been issued against each of those so charged. The complainant is a man named C. S. McCormick, who has been acting as picket at Salmo for the Ymir Miners' Union, the secretary of which has for some time past been advertising in a district newspaper that there is a strike at the Queen mine, at Sheep creek, about ten miles from Salmo, and warning working men to stay away until the strike is settled. On the other hand, a number of the men at the Queen mine assert that they were misled by the secretary of the union, who, they claim, told them that the miners all over the district were going on strike for higher wages, consequently the Queen men ceased work. When they found out that they were practically alone in stopping work they were dis-

paid. McCormick alleges that he first received an anonymous letter warning him to leave Salmo, and that several days later a number of men carried him to the Salmo townsite limits and told him to go to Ymir (eight miles away) and not return. The Ymir Miners' Union is said to be backing McCormick in his action against the Salmo men, who are being commended locally for having brought matters to a head in this connection.

ROSSLAND.

Ore-production figures show the output of mines in Trail Creek mining division during six months to July 1 to have been approximately 121,000 tons, this quantity including about 1000 tons treated at the 10-stamp mill at the Inland Empire mine, which is situated some miles away from Rossland, and the whole of the remainder from mines in the immediate vicinity of that city. The Consolidated Co.'s mines produced about

munity is one of confidence that the mines on Red mountain will continue to be productive and profitable for many years. An indication that this confidence is well-based is found in a recent announcement that the Canadian Pacific Railway Co. intends to substitute electric power for steam on its railway to Rossland.

Mining operations this year at the Josie mine of the Le Roi No. 2, Ltd., have been chiefly on the 300, 500, 700 and 900 ft. levels. The ratification of the agreement between this company and the Consolidated Mining and Smelting Company of Canada, Ltd., information relative to which has already been published, has had this result—the former company has since been able to do underground work which cannot now be questioned on the grounds of extra-lateral rights of the Consolidated Co. Several new ore-bodies have been discovered and worked. The rate of development work and production has been



Smelter of Consolidated M. & S. Co. of Canada, Trail, B. C.

satisfied with the situation, and eventually about half of them returned to work at the old rate of wages. Meanwhile the higher rate had been granted at the Motherlode mine, situated a mile higher up in Sheep Creek camp, which employs nearly twice as many men as the Queen. However, the Queen has been gradually getting men to work in its mine at the old rate of pay, until at the present time it has nearly a full force regularly employed, the so-called strike having thus adjusted itself. Several smaller properties, though, have for some time done little or no work, pending settlement of the question of rate of wages. Business men of Salmo, which derives most of its trade from mines in Sheep Creek camp and the vicinity, having become exasperated at the long-continued loss of business, decided that the Ymir Miners' Union picket should no longer be permitted to way-lay working men arriving by train to work at the Queen or other properties at which the higher wage would not be

101,000 tons (Centre Star group nearly 72,000 tons and Le Roi 29,000 tons), and those of the Le Roi No. 2, Ltd., 18,500 tons. Several small shippers made up the remaining few hundred tons. Of this total about 112,000 tons was shipped to the Consolidated Co.'s smelter at Trail, this including between 800 and 900 tons of gold-copper concentrate from the Le Roi No. 2 concentrator at Rossland. Incidentally, it may be mentioned that the total of ore and concentrates received at the Trail works during the six months was between 160,000 and 170,000 tons, and of this aggregate Rossland mines contributed fully two-thirds.

No particulars relative to operations at the Consolidated Co.'s mines at Rossland are available just now. It is generally understood, though, that there has been opened in them an abundance of ore, and some of it containing comparatively high value in gold, so that the prevailing feeling in the Rossland com-

much the same as during the company's last fiscal year, when development was at the rate of rather more than 500 lin. ft. a month, diamond-drilling nearly 1200 ft., and production about 3000 tons of ore, of which rather more than one-half was sorted out for shipment crude direct to the smelter, and the remainder concentrated into 140 tons of gold-copper concentrate monthly. Some work has been done on the 1500-ft. level, which corresponds in depth with that of the 1650-ft. level of the adjoining Le Roi mine, and ore was found here of a value of \$14 to \$15 in gold a ton and 0.33 per cent. copper. Permission has been obtained to use the Le Roi 1650-ft. level from which to open the Josie mine at this depth, and this will for the time being do away with the necessity of sinking the Josie shaft 200 ft. deeper and crosscutting about 900 ft. A new centrifugal, electrically-operated pump has been obtained, to replace the pumps now in use on the 500-ft. level of the

Josie mine. This additional pumping power has been provided to admit of the company's neighboring No. 1 mine being unwatered, as well as of pumping from the Josie, at the one station. Water from No. 1 will be drained along the Josie 500-ft. level, the workings of the two mines being separated by only 70 ft. of rock through which diamond-drill holes will give an outlet for water from No. 1 mine. Diamond-drilling into the northern ground of the Le Roi No. 2 group has been done, with the permission of the Consolidated Co., from the ninth level of the War Eagle mine, the depth of which about corresponds with the 900-ft. level of the Josie. Altogether, the outlook for the Le Roi No. 2, Ltd., is regarded as satisfactory, which is also the condition in respect of other operating mines on Red mountain, this comprising the main productive area of Rossland camp.

For a while there was no mining, nor preparation for any, in the South Belt of the camp, operations having been suspended at different times during the last twelve months on the Blue Bird, Richmond Consolidated group, and Phoenix, all three of which were being worked last summer. Now a power plant, including a hoist and a 12-drill compressor, is being put in at the Lily May, one of the Richmond-Consolidated Co.'s properties. The Rossland "Miner" on July 9 gave the following information relative to this property: "At the properties of the Richmond Consolidated there is great activity and 25 men have been employed during the past week in the construction of buildings. All concrete work is finished and the bed-plates laid ready for the compressor, as soon as the compressor building shall be covered in. The assay office—a four-room building—is completed, and the compressor building will be this week. The gallows-frame is being constructed, and the blacksmith and machine shops will be erected this week. Timbering the double-compartment shaft down to 55 ft. from the surface has been completed. Mining will be commenced as soon as all the construction work shall be done. The present outlet from the mine is by wagon-road one mile to the Canadian Pacific railway from Rossland to Trail, but eventually an aerial tramway will be constructed from the mine to the railway."

BOUNDARY.

In its issue of July 19 Mining and Scientific Press, of San Francisco, California, included in its "Special Correspondence" the following from New York: "New financing for the British Columbia Copper Co. will soon be undertaken, according to a statement attributed to its president, Newman Erb. The company has had a number of British Columbia properties under option, and Mr. Erb states that 1,500,000 tons of ore, up to 3 per cent. copper in grade, has so far been developed. If double this amount can be developed, new financing to take these properties over will be undertaken. The British Columbia Copper Co. now has an issued capital of \$2,958,545. Net earnings last year were \$425,985, and \$177,512 was paid in dividends. The company is well managed, but its ore reserves are low grade, and it has had a good deal of hard luck in one way and another, and dividends

have been few and far between." The correspondent above quoted appears to have lost sight of the fact that the British Columbia Copper Co. paid a dividend totalling \$88,756 on January 5th of the current year, which was part of the 1912 net profits and a distribution additional to that he mentioned as having been made last year.

The following information relative to the British Columbia Copper Co. was included in "Walker's Weekly Copper Letter" for July 19:

"British Columbia Copper Co.'s production has fallen off somewhat recently, due to the lower average grade of the ore now being mined and smelted; but notwithstanding this and the decline in the price of the metal, the company is still able to show a small operating profit from month to month. During the past year the management has examined a large number of outside mining properties and bonded several with a view to strengthening its mining position. Extensive diamond drilling and underground exploratory work have been done on the Princess group of claims in Copper mountain, near Princeton, with most satisfactory results. More than 1,500,000 tons of ore have been developed so far of an appreciably higher grade than that now being treated by the company. Plans are being made to concentrate this ore and ship the concentrates to the company's smelter. The management has been experimenting with the oil flotation system of concentration and results so far have been highly successful. It is probable that it will immediately establish a mill at Boundary Falls, at the lower terminal of its Lone Star and Washington tramway, and thus arrange for a continuous output from those mines. Only about seven per cent. of the Lone Star and Washington property has been explored and something like 300,000 tons of ore is developed. It is chalcopryite, disseminated in a talcose schist, and is understood to average better than two per cent. copper. British Columbia Copper Co.'s recently issued annual report, covering the 13 months ended December 31, 1912, showed a production of 11,146,811 lb. of copper, 142,025 oz. of silver, and \$517,253 in gold. Net earnings amounted to \$425,985, and \$177,512 was disbursed in dividends. During the year the company paid on account of new properties, and expended on their exploration and development, \$229,489."

Included in the "Copper Smelters' Reports" published by The Engineering and Mining Journal, New York, is the following information relative to the copper production of the Granby Consolidated Mining, Smelting and Power Co., Ltd., during the first half of 1913:

	Pounds of copper.
In Month of	
January	1,792,245
February	1,740,000
March	1,967,962
April	1,857,452
May	1,782,570
June	1,789,000

Total for six months.....10,929,229

Rossland has produced a total of \$55,577,452, according to the Rossland Miner, and is still producing at the rate of \$2,700,000 a year.

IMPROVEMENTS AT THE CONSOLIDATED CO'S SMELTING WORKS AT TRAIL, B. C.

The Consolidated Mining and Smelting Company of Canada, Ltd., continues to make improvements and additions to the plant at its lead and copper smelting works at Trail, British Columbia. That it is smelting a larger quantity of ore this year than last is evident, as will be seen from the following comparison, which also shows a generally higher value of ore smelted. During five months ended May 31 of this year the quantity of ore and concentrates smelted was 134,660 tons, the gross value of the metal contents of which was \$3,526,436. This compares with 296,458 tons of ore smelted during the company's last fiscal year and a gross value of metal contents of \$5,083,078. The monthly average smelted this year was 26,932 tons, gross value \$705,287, as against that for the last fiscal year of 24,705 tons a month of a gross value of \$423,590.

The chief changes and betterments made during recent months are as below:

Lead-Smelting Department.

In the lead sampling-mill provision has been made for finer crushing, so as to obtain a better product for good roasting. The crushing had been done by a Gates gyratory crusher, one set of Traylor Engineering Co's heavy-duty rolls 42 in. diameter and 16 in. face, and two sets of lighter rolls by the same manufacturers. Now the light rolls have been replaced by two more sets of the heavy ones.

Conveyor belts are being placed under all lead beds. These will feed direct to the hoppers of the roasters, and so do away with the use of the manual labor that has been necessary for tramping from lead beds to roaster hoppers.

Part of the old Huntington-Heberlein plant building has been taken down, leaving but 175 ft. of the old building standing. In place of that removed, a wood building has been erected, dimensions 61 by 234 ft. The roof trusses are wood with iron tie-rods, making an excellent roof that stands wind and rain and carries the snow of winter. A similar roof at the company's lead-refinery building has been serviceable and lasting. An electrically operated Niles 20-ton crane is used in this building; the rails that carry the crane are spaced 58 ft. centres.

Seven Huntington-Heberlein roasters are in use, and preparations are well forward for putting in two Wedge roasters, early receipt of which is expected. Space has been provided for the latter by hydraulicking away a gravel bank, and the firebrick to be used in construction is on the ground. It is intended to have the Wedge roasters in operation late in the ensuing autumn.

There has been a rearrangement of the converter pots, of which there are 36 in the building. These have been placed in four rows of nine each, and in convenient proximity there has been erected a large concrete bin in which the roasted ore is collected, being taken to it from the roasters on a steel con-

(Continued on page 25)

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VANCOUVER, B. C., JULY, 1913.

EDITORIAL

The B. C. Mining Exchange, on behalf of the mining population of British Columbia, extends a very hearty welcome to the members of the International Geological Congress, who will arrive in this Province towards the close of August. On another page of this issue some particulars are given of the objects and work of this Congress, and it is desired here to call particular attention to the varied nature of this most cosmopolitan gathering, in which practically every nation in Europe is represented by one or more individual delegates. The recognition and publicity which our great mineral resources will receive as a result of these excursions will prove of the highest value in attracting the favorable notice of that capital which is so urgently needed to develop those resources, and we trust that not merely those who are directly interested in mining, but also every citizen who can realize what the adequate development of the mines of British Columbia means to every man, woman and child therein, will do his part in providing the visitors with every facility in his power to en-

able them to realize the immense present and potential value of our mineral areas. For we "have the goods," and are not ashamed to show them.

The plans of those in charge of the forthcoming Vancouver Exhibition, regarding the inclusion of a thoroughly representative mineral display, as outlined in the interview with Mr. H. C. Brown on another page, should receive the warmest endorsement and co-operation of all interested in mining throughout the Province. The exhibit of minerals last year was a good one—the exhibit this year promises to be better still. A good ore exhibit is the best publicity agent a mining district can have. So send along your ore samples in good time.

While on the subject of giving publicity to the splendid mineral resources of British Columbia, we should like to strongly commend to the perusal of our readers the recently issued Report of the Minister of Mines for this Province for the year 1912, a comprehensive review and summary of which, from the pen of Mr. E. Jacobs, secretary of the Western Branch of the Canadian Mining Institute, appears at the commencement of this issue. The gratifying conditions and encouraging progress shown in this Report are worthy of the careful attention of mining men, financiers and investors the world over. The present is a fitting occasion, moreover for a word of appreciation of the high state of efficiency which the Department of Mines for British Columbia has attained to under the careful administration of Sir Richard McBride, Provincial Minister of Mines, and his two capable lieutenants, Mr. R. F. Tolmie, Deputy Minister, and Mr. W. Fleet Robertson, Provincial Mineralogist. Since these three gentlemen have occupied their respective positions in the important department which has in charge the administration of British Columbia's banner industry, they have uniformly shown themselves to be not merely fully conscious of the magnitude of this section of the resources of the Province, but possessing the mental capacity to appreciate the potentialities of that industry's growth, as well as the administrative and executive ability to handle its increasing dimensions in the best interests of the public. The B. C. Mining Exchange has the more pleasure in paying this well deserved compliment to a trio of gentlemen to whom the mining industry of the Province is deeply indebted, since it feels that their worth and work are sometimes overlooked by those who are enjoying the fruits of their labours.

Hearty congratulations to the sailors and marines of the U. S. Navy for the salutary lesson they gave the Socialists and "I-Won't-Works" at Seattle on the 18th inst. It is little incidents like this that remind a soft and luxurious generation that the trained and disciplined man-at-arms is still, in the last resort, the only protection which the enervating thing we call civilization has against the diseased monstrosities of its own breeding. The Socialists, the Anarchists, and similar cowardly organizations, who are brave enough when it is a matter of blowing up harmless workmen and women, or shooting unarmed men from ambush, show their degenerate and pusillanimous character every time they are confronted by real men. The Seattle affair, and the suppression of the riots in Johannesburg, South Africa, earlier in the month, when the free use of cavalry, machine guns and rifle fire brought a murderous mob to its senses, emphasize the folly of the anti-militarists and furnish abundant proof of the value of a well-equipped and trained soldiery. The first business of all governments is to keep order, and that can only be done by giving the professional agitator and his fat-headed dupes a good taste of that doctrine of force which they themselves are always threatening to use against peaceful and industrious men and women and helpless innocent children.

The Cariboo Observer said on July 19: "The wet weather of the past two or three weeks is proving very beneficial to the hydraulic miners, furnishing them with a good head of water for piping, which generally at this time of the year is slack."

The first lot of freight to arrive at Quesnel via Tete Jaune Cache, over the Grand Trunk Pacific railway and thence south to Quesnel, was received there on July 22. It was a drilling machine for use near Barkerville, to which place it travelled under its own steam.

The West Yale Review states that copper ore has been found by Urbhn Hicks on his Copper King mineral claim on Fifteen-mile creek, a tributary of Coughalla river, about two miles from the confluence of those streams.

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LATEST METAL MARKETS.

(From Chicago Mining and Engineering World.)

Silver.—Quotations at New York for bar silver per fine ounce and at London per standard ounce for the week ending July 23, were as follows:

	New York		London
	Cents	Pence	
July 17	58	27 1-16	
July 18	59	27 1-16	
July 19	59	27 1-16	
July 21	58	27 1-16	
July 22	58	27 1-16	
July 23	58	27 1-16	

MONTHLY AVERAGE PRICES OF SILVER

Month.	New York			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	63 1/2	61 1/2	62.928	56.259
February	62 1/2	58 1/2	61.625	59.043
March	59 1/2	56 1/2	57.969	53.360
April	60 1/2	57 1/2	59.540	59.265
May	60 1/2	59 1/2	60.360	60.754
June	60 1/2	58 1/2	58.975	61.265
July				60.615
August				61.600
September				63.364
October				63.504
November				62.750
December				63.390
Year				60.837

Copper.—The copper market was dull last week. An unsuccessful effort was made to establish higher prices on the part of some of the largest producers and sellers. Only small orders were obtained for electrolytic and casting grades in the domestic market for prompt and near-by deliveries, owing to underselling by second hands. Considerable business was done, however, in small lots of electrolytic in Europe while the market remained at the equivalent of between 14 and 14 1/2 cts. f.o.b., it being estimated that between 8,000,000 and 10,000,000 lbs. was sold for August and September shipment, but with the advance in the market above £65 10s European buying ceased.

Standard warrants have recovered a large portion of their recent recession under renewed speculative buying in London and now record net gains for the last week of 18s 9d for both spot delivery and for futures, final quotations being £63 13s 9d and £63 16s 3d, respectively. Best selected brands have also been marked up in London to the extent of 10s to £68 10s. In the New York Metal Exchange, warrants have been advanced five-eighths cent to 14.12 1/2 cts. bid, and 14.50 cts. asked.

Imports during the week ending July 17 at Atlantic ports by steamers were 2250 tons of copper, 1515 tons of matte and 2600 tons of ores. Since the first of July arrivals have included 4705 tons of copper, 2415 tons of matte and 5200 tons of ores at Atlantic ports only.

Quotations for copper per pound at New York and per long ton of 2240 lbs. at London for the week ending July 23, were as follows:

	Lake	Elec	Cast	Standard	London
July 17	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2
July 18	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2
July 19	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2
July 21	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2
July 22	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2
July 23	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2

MONTHLY AVERAGE PRICES OF COPPER

Month.	New York—Lake Superior			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	18 1/2	16 1/2	17.116	14.526
February	16 1/2	15 1/2	15.151	14.606
March	15 1/2	15 1/2	15.306	14.911
April	15 1/2	15 1/2	15.731	16.092
May	16 1/2	15 1/2	15.956	16.391
June	16 1/2	14 1/2	15.445	17.612
July				17.536
August				17.694
September				17.724
October				17.753
November				17.750
December				17.750
Year				16.695

Month.	New York—Electrolytic.			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	17 1/2	16 1/2	16.983	14.425
February	16 1/2	15 1/2	15.717	14.435
March	15 1/2	15 1/2	15.065	14.853
April	15 1/2	15 1/2	15.620	16.003
May	16 1/2	15 1/2	15.896	16.326
June	16 1/2	14 1/2	15.203	17.505
July				17.418
August				17.694
September				17.706
October				17.745
November				17.750
December				17.750
Year				16.634

Tin.—The tin market was steadier last week, but quiet. Both consumers and speculators did but little business, but the former were a little more active, being encouraged by the smaller fluctuations abroad, and considerable buying was done for spot and July shipment, and some buying also from steamers afloat. Some irregularity was developed through offerings from dealers in the interior at concessions from the asking prices here, but at the close of the week higher prices were being asked for spot tin. There was a lack of vitality, however, at the higher prices. A moderate volume of business was done in future positions by operators.

The result of the fluctuations in the London market for standard was a drop of £3 on spot and £3 5s on futures. Transactions were light.

The Singapore market declined £2 10s net, closing at the equivalent of £182 10s c.i.f. London.

Quotations for tin at New York and at London for the week ending July 23, were as follows:

	New York		London	
July 17	39.85	39.70	£182 5 0	181 10 0
July 18	40.00	39.82 1/2	182 10 0	182 0 0
July 19	40.00	39.82 1/2	182 10 0	182 0 0
July 21	40.50	40.25	184 5 0	183 5 0
July 22	41.50	41.00	187 5 0	187 5 0
July 23	41.62	41.25	188 15 0	188 15 0

MONTHLY AVERAGE PRICES OF TIN NEW YORK.

Month.	New York			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	51.25	49.50	50.414	43.275
February	50.30	47.30	48.738	43.345
March	48.50	45.62 1/2	46.844	42.690
April	50.25	47.37 1/2	49.075	43.970
May	50.75	47.10	49.15	46.055
June	46.75	42.50	45.071	48.046
July				44.605
August				45.849
September				49.232
October				50.073
November				49.869
December				49.899
Year				46.330

Lead.—Lead was quiet and easier last week. On call at the New York Metal Exchange 4.30 cts. was bid for spot, July, August and September, and 4.25 cts. asked for July, August and September, on Friday. For delivery East St. Louis 4.15 cts. was bid for spot, July and

August, with 4.20 cts. asked for each position, on Friday.

London advanced 10s last week. Soft Spanish was cabled £20, against £19 10s on the preceding Friday.

Quotations for lead at New York and at London for the week ending July 23, were as follows:

	New York		London	
	Cts. per lb.		Per Ton	
July 17	4.40	4.30	£20 10 0	
July 18	4.40	4.30	20 12 6	
July 19	4.40	4.30	20 12 6	
July 21	4.40	4.30	20 12 0	
July 22	4.40	4.30	20 15 0	
July 23	4.40	4.30	20 10 0	

MONTHLY AVERAGE PRICES OF LEAD

Month.	New York			
	1913	1913	1913	1912
	High.	Low.	Avg.	Avg.
January	4.37 1/2	4.25	4.301	4.435
February	4.35	4.25	4.30	4.068
March	4.40	4.25	4.340	4.167
April	4.45	4.30	4.381	4.213
May	4.55	4.25	4.418	4.164
June	4.40	4.25	4.336	4.395
July				4.669
August				4.581
September				5.071
October				5.088
November				4.633
December				4.300
Year				4.482

Spelter.—Spelter declined one-eighth cent last week. On call at the New York Metal Exchange 5.15 cts. was bid for spot, July, August and September, with offerings at 5.30 cts., on Friday. On call at the local Exchange 5 cts. was bid for spot, July, August and September, with 5.15 cts. asked for each position, on Friday.

London advanced 2s 6d net last week, closing at £20 12s 6d for G. M. B. against £20 10s on the preceding Friday.

Quotations for spelter at New York and at London for the week ending July 23, were as follows:

	New York		London	
	Cts. per lb.		Per Ton	
July 17	5.30	5.15	£20 10 0	
July 18	5.30	5.15	20 12 6	
July 19	5.30	5.15	20 12 6	
July 21	5.40	5.30	20 12 6	
July 22	5.40	5.30	20 15 0	
July 23	5.40	5.30	20 15 0	

MONTHLY AVERAGE PRICES OF SPELTER

Month.	New York			
	1913	1913	1912	1913
	High.	Low.	Avg.	Avg.
Jan.	7.40	6.40	7.192	6.505
Feb.	6.80	6.15	6.406	6.541
Mar.	6.45	5.70	6.222	6.817
Apr.	5.95	5.45	5.712	6.799
May	5.55	5.25	5.477	6.85
June	5.35	5.00	5.169	7.011
July				7.229
Aug.				7.042
Sept.				7.553
Oct.				7.550
Nov.				7.429
Dec.				7.331
Year				7.053

An output of one million tons of coal for the year 1914 is what Mr. Thomas Stockett, general manager of the local mines of the Western Fuel company, and other officials of the company expect as the result of the extensive development work now under way and projected in connection with the exploitation of the vast coal areas in Nanaimo and vicinity.

The annual report of the New Dominion Copper company shows a profit for the past fiscal year of \$116,949, as compared with a deficit of more than \$11,000 for the year before.

Coast and Island Mining

Good Progress on Portland Canal—The Granby Co.'s Plans for Portland Canal District—Vancouver Exposition to have Fine Mineral Exhibit—Flotation Process at the Britannia Mines—General News of the Mines.

INTERESTING INTERVIEW WITH GRANBY VICE-PRESIDENT.

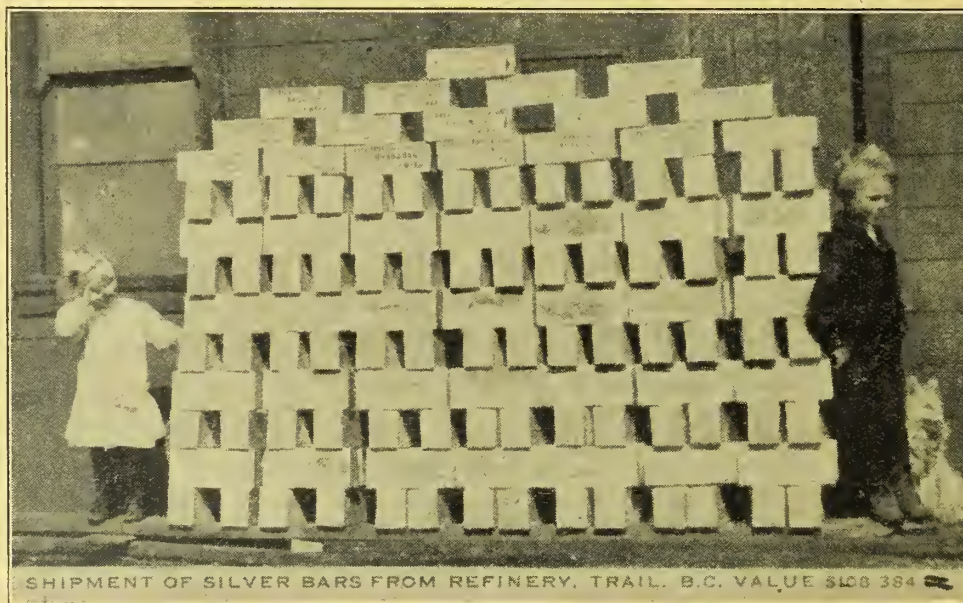
The Portland Canal Miner of the 19th inst. says:

"Just as soon as our copper furnaces are in operation, sometime early next year, it is the intention of the company, providing we are assured of a sufficient supply of lead ores, to install a lead furnace at the new Granby Bay works," said J. P. Graves of Spokane, vice-president and general manager of the Granby Consolidated Mining & Smelting Co., to The Miner on the occa-

gether with the erection of an immense smelting plant which would represent an investment of about \$3,500,000, had in its turn attracted considerable attention to the mining possibilities of the Portland Canal district, and he felt sanguine in stating that his company would not be behind in participating in the development of other mines besides its Hidden creek holdings. In speaking of the immense sum now being invested in the north, he said:

"Our initial outlay for the improvements being carried out at Granby Bay will represent an expenditure of about

cured from our mines at Phoenix, B. C. The ores in the north contain good subsidiary values in gold and silver. Tunnels, shafts and drifts have blocked out and proven up the ore bodies to a point 650 feet below the outcrop on the top of a mountain, and in addition diamond drills have encountered the same characteristic ore below the bottom of the lowest working to a depth of 300 feet below sea level. This ensures an available tonnage far exceeding the probable production during my lifetime," he concluded.



SHIPMENT OF SILVER BARS FROM REFINERY, TRAIL, B.C. VALUE \$128 384

A Fine Sample Shipment from Trail Smelter.

sion of his recent visit to Stewart. The general manager was accompanied north on a trip of inspection by A. C. Flumerfelt, a fellow director in the big enterprise.

While here both made many inquiries regarding the mining outlook, and were particularly interested in the project of the Portland Canal Tunnels, Ltd., to tap the Glacier creek vein series at depth, and in the development being undertaken in the Salmon river. Mr. Graves stated that while no invitation had been extended to his company to send mining men into the district he intended to take up this phase of the matter after a conference with F. M. Sylvester, acting general manager at Granby Bay. He also stated that there was, generally speaking, a far greater interest being manifested in mining, and that the development of the Hidden Creek mines on Observatory Inlet, to-

\$3,500,000, all of which has been provided for by the board of directors. This sum will cover the cost of properties, development, a smelter with a capacity of 2,000 tons daily, a converter, dam and power house, a railway connecting the mine and smelter, and ore docks. We have over 1,000 men engaged now, mainly in smelter construction work, and expect to have the new plant in operation early in January of next year. The permanent force will not fall short of the same figure.

"The smelter will be the most modern plant of its kind ever built on this continent, and we expect to produce copper at from 1 1-2 cents to 2 cents cheaper than our costs in the Boundary district. According to an estimate of our engineer, O. B. Smith, Jr., the ore now in sight in the mines at Granby Bay is about 8,000,000 tons, from which we expect recovery values double those se-

PROGRESS AT PORTLAND CANAL.

The Portland Canal Miner of the 19th inst. says:

Bringing word that a number of prominent mining firms would send representatives to the Portland Canal district before the season is over, Ben Erickson, accompanied by his wife, is back in camp, after spending the winter at his home in Seattle.

Mr. Erickson, in association with John McNeill, who is expected on the next boat, owns the Red Top group of six claims on the main Bear river. He is now at the property doing the annual assessment. Besides his holdings in the Red Top group, Mr. Erickson is largely interested in the Olga Mining Co. on Bitter Creek, and says that A. B. Ernst, state inspector of insurance at Seattle, has succeeded in interesting a French syndicate to send in an en-

gineer to report on the property with a view to obtaining a lease. Wolff & Co., of New York, and D. D. Muir of the Seattle office of the United States Steel Corporation, will both have representatives in the field to examine properties and Mr. McDaniel, who has large interests at Valdez, is expected to make a personal examination of a number of claims before the season closes.

Mr. Erickson first struck the camp in 1906, and was among the early locators of claims on Bitter Creek, American Creek and the main Bear River.

Portland Tunnels—Good progress is being made in the driving of the big bore, which has now passed the 1500-foot mark, being three-quarters of the contemplated distance of the tunnel.

Indian Mines—In the face of the main adit, in a distance of some 235 feet the vein measures a width of seven feet. Of this face a large portion is of solid steel galena. The new shoot has been followed for a distance of 35 feet in a splendid grade of ore. The face is under the surface a depth of 150 feet. The holdings of the company are being surveyed for Crown grant.

Red Reef—The contractors driving the upper tunnel expect to complete their work about the end of the month or the first week in August. Much hard rock, well pregated with copper, has been encountered recently.

Roosevelt—President Joseph Chew, of Vancouver, and D. J. Rainey, one of the original locators, were up at the property recently.

Cascade Falls—Work is being continued steadily with a small force, and encouraging news is brought to town of the striking of some good galena.

Montana—The leasers, Kingle and Lawrence, have now sacked some 70 bags of high grade silver gold ore principally taken from the surface exposure of the vein. The tunnel to tap this showing is in a distance of 60 feet.

FLOTATION PROCESS AT BRITANNIA.

At the annual general meeting of the Minerals Separation American Syndicate, Limited, in London, England, recently, the chairman in the course of his address made the following reference to the use of the syndicate's process at the Britannia Mining and Smelting Co's concentration works at Britannia Beach, Howe Sound, in Vancouver mining division: "At the Britannia mines, in British Columbia, where the plant has been in operation for many months, recoveries of more than 94 per cent. are being regularly obtained, and the management of that company say they will be disappointed if they do not get 98 per cent. recovery from their first 600 tons per day unit, which they hoped to put into commission early this month. Later on the Britannia company proposes largely increasing the capacity of their mill and flotation plant." The Mining Magazine, London, said in its June number: "The results obtained at the Britannia copper mine in British Columbia with the Minerals Separation process are remarkably good. The ore, which consists of chalcopryite and pyrite, averages 5.5 per cent. copper; the concentrate obtained contains 22 per cent., and 0.2 per cent. is left in the

tailings. The first unit now in course of erection has a capacity of 600 tons per day."

THE MINERAL EXHIBIT AT THE FORTHCOMING VANCOUVER EXPOSITION.

"British Columbia is on the eve of a great revival in mining, and it is for Vancouver to prepare for it," said Mr. H. B. Brown, superintendent of the mining exhibit at the Vancouver Exhibition, who has just returned to the coast from a trip through the interior in connection with this year's mineral display, in a press interview. "The new methods of handling low-grade copper ores alone means that a vast development will take place within the next few years. Take the Britannia mines at Howe sound for example. Under the old method of handling the rock, they only secured about 60 per cent. of the value, but with the concentration system nearly 95 per cent. is extracted.

"This means," continued Mr. Brown, "that the low-grade propositions turned down a few years ago as too costly to work will be opened up, and developed as they should be. If Vancouver reaches out for the trade that will spring up with the awakening of the mining industry this city will become one of the greatest mining centres in the world, for almost every known mineral can be found in this province. It will mean a big thing to Vancouver to have a dozen producing mines within a few miles, and that is what the next three or four years will bring.

"This whole coast is rich in copper. Take the Marble Bay mine on Texada island. When this was first opened old miners and even experts predicted that when the rich bornite ore body was passed through that the mine would 'peter out,' but today it is one of the best producers and money-makers in the country. The rich ore was found in the deeper levels. That is what will happen in many a good prospect which has been turned down when the upper stratas were worked—they will be opened again and the pay rock will be found deeper than anticipated.

"While gold mines may work out, copper propositions are good for centuries, and it is the copper mines that Vancouver should look to for permanent support as a mining centre. Look at the amalgamated properties at Butte, Montana, and at the mines in Spain, which have been operating since the dawn of the Christian era. Those are really of far more value to the nations to which they belong than gold mines.

"Not to say that there are not some valuable gold propositions in this province which will yield millions. I visited a likely-looking property the other day at Hope, which gives promise of being a big mine some day. It is the Aufeas, the property of the Aufeas Mining Company. Only four miles from the town and but two miles from the line of the C. N. R. and the Interprovincial motor road, the mine is in an excellent position. It is an arsenic-gold proposition, running on an average of \$45 to the ton.

"A tunnel 400 feet long has been driven, and while only one wall has been uncovered, a five-foot vein has

been opened, which gives promise of increasing in volume. Old country capital is heavily interested in the mine. So much arsenic is in the ore that it may be treated for that before being sent to the smelter to extract the gold and copper values."

In connection with the exhibition this year, Mr. Brown stated that his display would be the finest ever gathered together in this country.

"Samples are coming in already," he said, "from the interior and the north. Stewart district will be specially well represented, while some excellent ores have been promised from Prince Rupert. It is also hoped to get an exhibit of the product of the new salt fields on the Skeena, operated by Frank Mobley of Prince Rupert."

AUFEAS GOLD MINES, LTD.

The West Yale Review reports that on the Aufeas property, on Wardle creek, the vein has been entered at 385 ft. from the portal of the lower tunnel and at a depth of about 450 ft. The ore is similar in character to that found at the outcrop, samples of which assayed from \$23 to \$30 in gold and also contained a high percentage of arsenic. There was cut by the adit nine feet of ore, and the hanging wall had not been reached. It is intended to construct an aerial tramway and afterward ship ore to the smelter at Tacoma, Puget sound.

In this connection the following excerpt from a report by Mr. Chas. Cam-sell, published in the "Summary Report of the Geological Survey," for 1911, will be of interest: "A group of three mineral claims known as the Jumbo group is situated on the west side of Silver creek, about four miles southwest of Hope. The claims lie in a steep narrow gorge at an elevation of about 1000 ft. above the sea. The country rock is massive grano-diorite, in places sheared and traversed by fissures. The ore deposits lie in the fissure veins and have a width averaging about eight inches. They contain dull-colored arseno-pyrite and a little chalcopryite in a gangue of quartz, and gold is the principal valuable metal in them. The value of the ore in the fissures ranges from \$10 to \$60 to the ton. The claims are developed by three tunnels of varying length and several open-cuts. These claims and adjoining locations are now owned by the Aufeas Gold Mines, Ltd., which has recently made successful arrangements for financing the development of the property. The company intends building a wagon-road from the Interprovincial highway at the mouth of Wardle creek to the camp, and proceeding with the construction of permanent camp buildings, including cookhouse, bunk-houses, storehouses for supplies and tools, the laying of pipes to supply the camps with water, and the clearing of the right-of-way for an aerial tramway. As soon as the road and camp shall be ready for use, work on the lower tunnel will be begun and will be continued until the vein shall be reached."

It would appear that development work has been carried out, as proposed, and that results are very much better than surface indications gave promise of, for the vein lately cut at depth was only about a foot in width at the surface, where it was uncovered for a length of more than 300 ft.

FAVORABLE OUTLOOK FOR THE PROPERTIES OF THE B. C. COAL & OIL DEVELOPMENT CO.

Considerable attention has from time to time been given in these columns to the operations carried on for the last ten or fifteen years in the Flathead country for the purpose of searching for oil. Generally speaking, these operations have not been successful, and have done little more than multiply the number of instances in which oil seepages could be detected at the surface. The reason of this has been the inadequacy of the boring plants employed and the explanation of this again has been the enormous cost of getting machinery into the country in the absence of good roads.

People have scoffed at the whole project because of the meagre results, but if they had carefully considered the conditions, they would have seen that nothing which has happened really touches the question of the probable discovery of oil in paying quantities.

Recently conditions have improved. The Corbin railroad has brought transportation within forty miles of the Sage Creek property, and the judicious expenditure of nearly \$20,000 by the government has provided a good wagon road. The consequence is that a large up-to-date drilling plant was taken in during the past winter by the B. C. Oil Company, and is now in operation. The same company is arranging to take in several thousand feet of casing pipe next fall, and with these appliances there is every reason to believe that it will be possible to carry down a borehole deep enough to cut the oil-producing sand. It is these sands which are responsible for the present paragraph. Anyone who understands the geological formation of oil-producing countries knows that oil lies imprisoned in sand beds. These beds are contained between layers of rock of varying thickness. It is the thickness of the rock that determines the depth of the boring. There is no instance of pay oil being met with until the sands are pierced and the imprisoned fluid liberated.

The whole problem has been to determine whether in the Flathead district these oil sands exist, and it has always been considered that the point can only be determined by boring to a depth estimated at 2500 to 3500 ft. The problem has been solved by accident. Recently, whilst digging on the surface, a number of workmen found an oil seepage in a new place. Removing some ten or twelve feet of decayed timber and surface soil, they came upon an exposure of grey sand, which proved to be full of oil and to be the feather-edge outcrop of a large body. On clearing a small area they found the oil exuding freely and had no difficulty in securing a considerable quantity by way of sample.

A small amount of surface work has been sufficient to prove that by means of shallow wells it will be possible to ship out a considerable quantity of oil, but this can only be regarded as a tentative and not as a permanent proposition. What is now wanted is to pierce this same bed of sand by a bore hole at a greater depth, so that a gush-

er may be tapped and a steady flow secured. This will be the work of the immediate future. Meanwhile the sample of sand and oil, now in the hands of the company's representatives in Victoria, satisfactorily clears up the point of the actual existence of oil in the Flathead, and incidentally furnishes justification for the prosecution of extensive boring operations.

It is only fair to add that the oil obtained is exceptionally pure and of high grade, such oil as can readily be sold in British Columbia at \$5 per barrel. The only question now remaining to be determined is the thickness and extent of the oil sand deposits, and judging from the persistency with which expert authorities have maintained that the Flathead country possesses all the earmarks of an oil country, the discovery would seem to be full of significance and hope.

As we go to press, we learn that the B. C. Coal & Oil Development Co. is now taking in a carload of casing for the big hole, and Mr. Anthony Anderson, manager of the company, is at present on the ground and will return about the latter end of August with a consignment of the oil in barrels. We also understand, from another source, that Mr. G. R. Morrison has taken a party of his associates into the district for the purpose of inspecting the property and acquiring holdings, and that they are so well satisfied that they have already made initial payments on a considerable area of oil lands at a good figure.

PROSPECTORS BUSY IN HAZELTON DISTRICT.

The Omineca Herald of the 18th inst. says:

In spite of the late season the prospectors are all busy now and they report a number of fine new showings. The outlook for this season is very bright.

Frank Brown and Bert McNaught have been on the Lead King on Nine Mile mountain doing exploration work on the big King vein, which was discovered two summers ago by P. J. and Theodore Jennings, and which was of so much interest at the time. Nine Mile mountain was the scene of the first mineral discoveries in the district, and there are many who believe that the biggest mines in the district will be on Nine Mile. The improved transportation will enable the owners to get busy.

Slats Webber came into town Monday from the Ingenica group with some fine specimens of ore taken from under the capping on Pyramid claim. The boys are making new discoveries every day, although the prospecting is slow on account of the slide rock and timber. They will be working all summer and fall, and expect to have a lot of good ore exposed and ready for big development. They have a good trail to their property.

At the present time there is a good deal of prospecting around the Skeena Crossing side of the Rocher de Boule mountain in the vicinity of the Brian Boru.

Martin Kane has got some fine looking ore on the Maid of Erin group on Four Mile mountain, adjoining the Erie.

Tim Sexton, better known as Tracey, is in from the Hudson Bay mountain with some nice looking junk from his claim adjoining the White Heather group of Frank Martin and Joe Trethewey. It looks like the same character of ore and will likely run rich in silver.

MINING DEVELOPMENT AROUND HAZELTON.

The Omineca Miner of the 12th inst. says:

Mining development around Babine lake is progressing favorably, according to Charles Newman, the veteran miner, who was in town on Monday. Mr. Newman is developing the Babine group of five claims, located four miles south of old Fort Babine. He has done \$3,000 of work, including 180 feet of tunnelling, and has a fine showing of copper pyrites carrying gold and silver. The vein occurs on a contact of porphyry and lime, pitching into the hill at 45 degrees. Assays as high as \$53 have been obtained, but Mr. Newman says the ore will average about \$28. In places the ledge shows a width of over forty feet.

The approach of the railway has greatly stimulated mining in this vicinity. The owners of many promising claims on Hudson Bay mountain, close to Smithers, are redoubling their efforts to open up their properties.

One of the most widely known mining properties of the district, the Coronada, will be operated on a large scale in the near future, according to the plans of R. J. McDonell, the principal owner. The group, which is located on Hudson Bay mountain, ten miles from Smithers, has one of the finest showings of silver-lead in the province, returning high values. Conditions for working are most favorable, tunnels on the vein being the method of development. A great deal of work has already been done, with the result that there is now ready for shipment considerable high-grade ore. The construction of a road from the mine to Smithers will be undertaken at once, it is stated, so that supplies can be taken up to the mine and the ore brought to the railway at greatly reduced expense. Mr. McDonell is expected to arrive here in the course of a few days, to perfect plans for development.

Engineer Hasbrenck, who comes from Germany to examine the Groundhog coal seams, is expected to arrive in Hazelton tonight. A. E. Falconer, with a party of men and a packtrain, will accompany the visitor to the coalfield. It is understood Mr. Hasbrenck will make a report to German capitalists.

Butte men are negotiating for a lease on the Silver Bell group, on Nine Mile. The three claims have a big showing of galena, samples of which have been taken by the Butte people. George T. Stewart and his associates, who own the property, will do some work on the claims this summer.

IMPROVEMENTS AT THE CONSOLIDATED CO'S SMELTING WORKS.

(Continued from page 19).

veyor. The converter pots are placed below the bin and filled from it and are then lifted to the converter stands by the Niles crane. After its contents have been sintered and cooled, the crane takes the converter-pot and drops the sinter hard down on a floor, thus breaking up the large cakes. A Hayward clam-shell bucket, the largest size made, lifts the sinter and dumps it in a hopper that feeds a 24 by 36-in. Farrel crusher, from which it is taken to bins by a steel conveyor. At the upper end of the conveyor the sinter is passed over coarse and fine grizzlies which eliminate the fines and leave a better product for smelting in the lead blast-furnaces. The fines are mixed with fresh roast from the roasters and reconverted.

A gas producer is being installed to provide gas fuel for all the roasters and such other purposes as it shall be found advantageous to use the producer-gas for.

A new building has been erected alongside the H. & H. building, for housing the small Roots blower used for the converter pots, and for a centrifugal fan giving 16 oz. pressure. In the upper story of this building are an office for the shift boss, and change and lunch-rooms for the men so that they may be away from the lead dust when eating or resting.

Three new lead blast-furnaces are being constructed. Dimensions at tuyeres are 45 by 216 in. They will have wrought-iron jackets, with 14 tuyeres; also cast-iron jackets with sniger tuyeres, as at present in use on the old furnaces. Height from centre of tuyere to feed-floor lead, 17 feet 6 in. These new furnaces will have these to have their feed-floor on the same level as that of the copper furnaces instead of the higher level found convenient for hand-feeding. With mechanical feeding arrangements, one level for the feed floor of all furnaces, both copper and lead, admits of more economical handling of furnace-charges, etc. To provide room for the new furnaces, the main furnace building has been extended eastward by the addition of another bay of about 40 ft. with a lean-to on the south. The lowering of the tapping-floor of the lead furnaces by 10 ft. below its former level involved the removal of gravel to that depth as a minimum, and this was done by hydraulicking it out to the dump. Meanwhile the feed tracks of the two old furnaces (which are to be taken out), columns of building, etc., had to be held up while the changes were being made and until new concrete piers and I-beams had been put in to form a new foundation and substructure.

Copper-Smelting Department.

In the copper-smelting department, the improvements in hand include putting in a conveyor to convey the ore from the copper sampling-mill to a stock pile when there is more ore coming from the mill than can at the time be held in the furnace charge bins. A new storage bin has been built, with a tunnel under it. This bin has floor and sloping sides, so that the ore may run into the discharge chutes.

All stock pile floors and bins now have tunnels under them, so that cars for removal of materials may be run in and so be loaded with less labor, the work of shoveling being thus entirely done away with.

In place of the 4-ton motors formerly used there are now two 7-ton electric locomotives for hauling to the charge bins, while larger cars are being made, the intention being that these improvements shall allow of each day's hauling to the charge bins being done in one shift. One of the 7-ton locomotives is also used for hauling cars of lead anodes from the furnace tapping floor to the refinery, instead of by railway locomotive as before.

The copper-smelting plant has for some time included five blast-furnaces. Of these, No. 2 has been taken out and in its place there has been constructed a 42-in. by 35-ft. furnace with 28 standard tuyeres on each side. This furnace has an arched top and flat flue, the latter arrangement admitting of goose-necks being done away with to allow of putting in a traveling crane overhead for handling purposes on both furnace floors. It is expected that the new furnace will be found to possess such advantages that two similar furnaces, also of 450 tons capacity, will be substituted for three smaller furnaces, thus providing for treatment of 1350 tons of copper ore a day (exclusive of fluxes) in three blast-furnaces.

On the No. 2 furnace, the water-feed pipes have been so arranged that all valves can be reached from the tapping floor, and discharge pipes so placed that the furnace-man can at all times see what waste water is coming from the jackets. The overflow trough has been made larger and placed farther out, so that no water will spill on to the furnace-man when engaged underneath punching the tuyeres. This furnace has centre feed, the charge train being pushed into it by the electric motor, the charge cars running on water-cooled rails on track level. After the tunnels under the charge bins shall have been enlarged wheels will be placed on the upper part of the charge cars and these will then, while in the furnace, run on rails placed at the proper height.

Crushing and granulating copper matte is not now done here as formerly, so the old plant used for that purpose has been taken out, thus giving more room at the west end of the furnace floor and allowing of a rearrangement of the tracks about No. 1 furnace. All low-grade copper matte is put through this furnace with siliceous ore to raise the copper content and give a matte of 35 to 40 per cent. copper for shipment to works at Tacoma, Washington, for converting.

No copper ore roasting is now done at Trail in the Huntington-Heberlein pots. Copper concentrate only, chiefly from Rossland mines, is sintered on the Dwight-Lloyd machines, the grates of which have been changed from the herring-bone grate previously used to straight-slot self-cleaning grates.

In the Blower Room.

Blast is delivered to the furnaces at 32 to 34 oz. pressure. Six blowers have been in use—four Roots and two Connersville. Another No. 11 Roots is being added, this to give 401 cu. ft. per

rev. and be driven by two 300-h.p. induction motors.

General Notes.

The pyritic smelting of raw copper matte, commenced in the early part of 1912, has been discontinued at Trail. While this practice was followed the charge consisted of 4200 lb. of matte, 2000 lb. of siliceous ore, 13.5 per cent. of lime-rock, and 4 per cent. Crow's Nest coke.

The ore treated in the copper-smelting department is obtained chiefly from the company's mines at Rossland. An approximate analysis of this ore is:

Fe.	CiO ₂	CaO	Al ₂ O ₃	S	MgO
17.0	44.0	5.5	15.5	8.0	3.5

This ore is smelted with 30 per cent. of lime-rock and 16 per cent. of Crow's Nest coke.

OLD FRIEBERGERS IN AMERICA.

Dr. Richard Beck, president of the Freiberg Bergakademie, Freiberg, Saxony, Germany, is now in Canada attending the International Geological Congress. After the meetings of the Congress Dr. Beck expects to visit several places in the United States before his return to Germany.

A complimentary dinner will be given in honor of Dr. Beck at the Engineers' Club, 32 W. 40th St., on Sept. 9th, at 7 p.m. All former students are invited to attend this dinner. For further particulars old Freibergers should write the secretary, C. L. Bryden, 1701 Jefferson Ave., Scranton, Pa.

THE PRINCE RUPERT EXHIBITION.

Mining men throughout the north are becoming keenly interested in the proposed Prince Rupert Exhibition, especially since the announcement was made by the management that the Mineral Department promises giving twice the number of prizes and cash awards previously offered at a provincial exhibition. The exhibition will be held September 24th 25th and 26th and will have a special building for the display of the mineral wealth of the northern part of the province and this feature is to be one of the best of the fair.

There already promises to be active competition for the district prize of \$50 and word has been received that Atlin, Stewart, Kitselas, Hazelton and the camps of the Queen Charlotte Islands will be represented in magnificent displays of ores and coal. Five dollar prizes are offered for the best exhibits of gold, silver, copper-gold, silver-lead and zinc ores and a special \$10 prize is being given by the Portland Canal Miner for the largest individual exhibit of ore from any mine or prospect in the north. Prospectors have also been very generously treated in three cash prizes of \$15, \$10 and \$5, for the best collection of district specimens. The coal mining industry is expected to have a good showing of "black diamonds" and for the first prize R. W. Cameron of Prince Rupert is adding a \$25 silver cup.

Prizes are offered for the best commercial exhibits of building stone, marble, clay, cement, brick, slate, etc.

For the benefit of mining men and others in the south wishing to attend the fair special rates are being offered by the various steamship companies operating to Prince Rupert.

PERSONAL AND GENERAL

Movements and News of Prominent Mining Men.

Written for the B.C. Mining Exchange by E. Jacobs

Mr. W. P. Alderson (not W. L. Anderson, as incorrectly stated last month), has been appointed general manager for the Motherlode Sheep Creek Mining Co., with gold mine and modern stamp mill in Sheep Creek camp, Nelson mining division. After ten years active mining experience in Ontario, British Columbia, Mexico and New Mexico, Mr. Alderson in 1911 joined the staff of the Hollinger Gold Mines, in Porcupine district, Ontario, where he was in the metallurgical department in connection with the recovery of gold in the Hollinger Co's big mill.

Mr. Henry E. Allen, for seven years on the properties of the Ashanti Goldfields Corporation, Ltd., in Gold Coast Colony, West Africa, and for four years engaged in silver mining in Mexico, recently came to British Columbia to seek suitable employment at the reduction plant of a gold mine. He is at present staying in Victoria.

Mr. W. M. Archibald, of the Consolidated Mining and Smelting Co's mining engineering staff, has latterly been making Nelson his headquarters instead of Trail, the company being engaged in developing several mines that can be more expeditiously reached from Nelson than Trail.

Mr. E. Berryman continues to be very fully occupied with his duties as local superintendent of the British Columbia Copper Co. on Copper mountain, Similkameen district, where Mr. F. R. Weeks is resident engineer in charge.

Mr. John Bell, foreman at Mr. John Hopp's Stouts Gulch hydraulic placer-gold mine, near Barkerville, Cariboo, when walking along one of the flumes had the misfortune to fall and break one of his wrists.

Mr. L. A. Bonner, of Barkerville, manager for the West Canadian Deep Leads, Ltd., who took the law into his own hands and twice destroyed with dynamite part of one of Mr. John Hopp's water ditches after two government officials had decided that the latter was legally in possession, has been sentenced to three months in jail, and this despite the strong influence brought to bear to endeavor to secure for him immunity from the deserved punishment.

Mr. M. W. Brewer, of Victoria, has been engaged by the Provincial Department of Mines to investigate mining conditions in the Bridge River section of Lillooet district and make a report thereon.

Mr. James Buchanan, of Trail, superintendent of the Consolidated Mining and Smelting Co's smelting works, is on a visit to Scotland. During his absence Mr. M. H. Sullivan, assistant superintendent, is in charge of metallurgical operations at the works.

Mr. Phil Corrigan is getting out some high-grade silver-lead ore from the Winona property, in Jackson's basin, near Whitewater.

Mr. H. V. Dardier, president of the Aueas Gold Mines, Ltd., operating on Wardle creek, near Hope, left Vancouver on July 10 on a trip to London. Late in the month the No. 2 adit of the company's property entered an ore body that was reported to be 9 ft. wide without the hanging wall having been reached.

Mr. W. E. Finch, manager for the Finch syndicate, which is developing under option of purchase the Idaho-Alamo mines in Slocan district, left New Denver lately to spend a short time at his home in Spokane, Washington.

Mr. A. R. Fingland, of Vancouver, was in the Slocan Lake district recently, in connection with an extension of time for the British Columbia Copper Co. to do further development work under its option of purchase of the L. H. group of mineral claims, owned by Mr. Fingland and associates and situated near Silver-ton.

Mr. J. J. Fingland, the well known assayer who has been practising his profession in Slocan district for a number of years, is now assayer at the group of mines near Whitewater being operated by Messrs. J. L. Retallack & Co., with Mr. J. Street as resident superintendent.

Mr. Donald G. Forbes is this season investigating conditions in several mining camps in the Coast district, to report on them to the Provincial Department of Mines.

Mr. Charles Graham, for several years superintendent for the Nicola Valley Coal and Coke Co. at its Middlesboro colliery in Nicola Valley district, has been appointed superintendent for the Corbin Coal and Coke Company, which is operating a productive mine in Crow's Nest district, Southeast Kootenay. Mr. W. Gus Smith, who has been the company's resident engineer from the beginning of its development of the property, is taking a well earned long holiday.

Mr. Robert R. Hedley, of Vancouver, has commenced doing preliminary work on the Tassoo copper property, on the west coast of Moresby Island of the Queen Charlotte group, on which property there occurs an orebody more than 300 ft. wide.

Mr. W. H. Trewartha-James was lately reported by English mining journals to have returned to England from Northern Nigeria. It will be remembered that Mr. James was for several years until late in 1911, general manager of the Tyee Copper Co. and had his headquarters in Victoria.

Mr. H. H. Johnson, who last summer spent some time in examining the Big Interior mining property situated in Alberni mining division, Vancouver Island, is reported to have made arrangements for working the property, under the name of the Ptarmigan Mines. Newspaper announcements have been to the effect that it is intended to ship 100 tons of ore a day to the Tyee Copper

Co's smelting works at Ladysmith, but well informed men express the opinion that there is little probability of such an output being regularly maintained this year. Mr. Johnson is an associate member of the Institution of Mechanical Engineers and a member of the Institution of Mining Engineers, both Old Country institutions, the latter having a membership of between 3,000 and 4,000. Beside his English experience, Mr. Johnson was engaged in mining in South Africa for a number of years.

Mr. Robert Keffer, who graduated as mining engineer from the State College of Washington, Pullman, Washington, last month, is now employed in the British Columbia Copper Co's laboratory, Greenwood, Boundary district.

Mr. J. P. Keene, formerly of Camp McKinney, where for years he successfully managed the Cariboo gold mine and stamp mill in the dividend-paying days of that enterprise, is now engaged in developing the Wonderful, near Sandon, Slocan district. In the years 1896-1898 Mr. E. J. Fields, a mining engineer who now makes Spokane his headquarters, recovered a considerable quantity of silver-lead ore, variously stated at from 400 to 600 tons, by ground-sluicing on the Wonderful, the ore having run from 113 to 133 oz. silver to the ton, and 70 to 76 per cent. lead. About 4,000 ft. of work was done in exploring for the vein. Lately Mr. Keene found the first silver-lead ore ever discovered in place on this property, this consisting of bunches of clean galena in a 4 ft. 6 in. vein being opened in an adit at a depth of about 310 feet below the surface. The property is being worked under lease and bond by Mr. Keene and associates.

Mr. John Kiddie, elder son of Mr. Thomas Kiddie, who was formerly manager of the Tyee and Crofton smelting works, successively, was married on June 23 at Los Angeles, California, to Miss Florence Eunice McGowan Bain, daughter of Mr. and Mrs. John Bain of that city. The newly married couple have made their home in Morenci, Arizona, where Mr. John Kiddie fills an important and responsible position with the Arizona Copper Co. His parents still reside at West Alhambra, California, and their younger son, George R. Kiddie, is also living in that neighborhood.

Mr. O. E. LeRoy, of the Geological Survey of Canada, was in British Columbia recently in connection with arrangements for the visit to the West in the latter part of August of two excursion parties of members of the International Geological Congress, the twelfth meeting of which has been arranged to be held in Toronto, Ontario. After having visited Victoria and Vancouver, Mr. LeRoy went to Rossland and Nelson, and thence through the Crow's Nest Pass district to Medicine Hat, Alberta, on his return eastward to attend the Congress.

Mr. H. Mortimer-Lamb, secretary of the Canadian Mining Institute, has returned to Montreal from a short visit to England.

Mr. George Long is now foreman at the Ottawa, in Slocan City mining division, which mine was purchased a short time ago by the Consolidated Mining & Smelting Company of Canada, Ltd., and is being further developed after having been idle for some time.

Sir Richard McBride, Premier and Minister of Mines for British Columbia, has arranged to pay another official visit to England during August, leaving Victoria about the 12th of that month. He will return to the Province probably about the end of October.

Mr. J. P. MacFadden, who is a graduate of the Michigan School of Mines, is now superintendent at the Surprise mine, between Cody and Jackson basin, in Slocan district. Exploration work is being continued in workings opened from the rise and from the long extension of the Last Chance No. 3 adit to the old Surprise mine. Shipment of ore will be undertaken after sufficient shall have been developed to warrant putting in running order the old aerial tramway down to Cody creek.

Mr. J. P. Miller, with several men assisting, continues to take out and sack ore from the Panama mine, which is situated high up on the mountain above Fish and Bear lakes, Slocan.

Mr. J. W. Moodie, vice-president and general manager of the Britannia Mining and Smelting Co., has returned to Britannia Beach from a trip to Montana and Utah.

Mr. P. Newitt is superintendent of the concentrating mill the Le Roi No. 2, Ltd., continues to operate in Rossland camp, and at which the second class ore from that company's Josie mine is concentrated.

Mr. W. E. Newton, assayer at the Van-Roi mine, in Silverton camp, Slocan lake, is stated to be likely to take a similar position at the Slocan Star mine, near Sandon.

Mr. H. G. Nichols, formerly manager of the Ymir mine, now of the firm of Bainbridge, Seymour & Co., of London, was expected to leave that city for Canada during July.

Mr. Frank E. Pearce, manager for the company owning the Inland Empire mine and stamp mill, situated on Grenville mountain, near the western boundary of Trail Creek mining division, was recently on a visit to the Coast cities.

Mr. J. A. Poyntz is superintendent of the Utica silver-lead mine, on Paddy's Peak mountain, in the western part of Ainsworth mining division, and one on which some 25 men are now employed. During January and February last about 125 tons of ore was shipped; the metal contents were from 161 to 201 oz. silver per ton and from 14 to 20 per cent. lead. Late in June, shipment of ore having been again practicable, five cars containing approximately 180 tons were loaded for Trail, and this ore ran from 117 to 213 oz. silver per ton and 20 to 21 per cent. lead. More ore is being got out for shipment. Mr. C. F. Caldwell, manager of the Utica Mining company, has been absent from Kaslo for a short time, on a visit to Superior City, Wisconsin, and other places in the United States.

Mr. John E. Rinta has been appointed manager for the Rambler-Cariboo Mines, Ltd., following the resignation of Mr. W. E. Zwicky. Mr. Rinta had been actively connected with the Rambler-Cariboo for about ten years; he was foreman during the whole of the time during which the 4500-ft. low level cross-cut adit was driven, and the important development work afterward done which opened a large quantity of ore on several levels

down to 1400 ft. in depth. Mine and concentrating mill are now worked on a scale of production not practicable in past years.

Mr. Wm. Fleet Robertson, Provincial Mineralogist, will attend the International Geological Congress in Toronto from August 7th to 14th and return westward with one of the excursion parties scheduled to leave Toronto for the West in the evening of the latter date. He is chairman of the Victoria local committee in connection with the visit of delegates and members to the capital of British Columbia.

Mr. Wm. Springer, one of the pioneers of Slocan district, after having retired from superintending the development work of the Finch syndicate on the Idaho-Alamo properties, above Alamo, Slocan, went on a prospecting trip in the country in the vicinity of the North Thompson river. While there he heard from several men met that lead occurs in that part of the province. He intends to make another trip to the district and prospect for lode minerals there.

Mr. Everard Steele recently gave in the vicinity of Nelson a demonstration of the advantages of an explosive, "steelite," he manufactures. This is a chlorate of potash explosive; among the advantages claimed for it are that it is not affected by sudden changes of temperature, is not subject to spontaneous combustion, no shock nor blow will cause it to ignite or explode, it burns slowly, and the fumes it produces may be inhaled with immunity and without harmful effect upon those inhaling them. Manufacture of the explosive has been carried on in the vicinity of the Van Roi mine, above Silverton, for several months, and it has been used in that mine in the ordinary course of development work. It is proposed to establish a manufactory on the west side of Slocan lake, opposite New Denver.

Mr. Ralph S. G. Stokes, formerly mining editor of the Rand Daily Mail, Johannesburg, South Africa, and now representing a Canadian mining and development company, was in Vancouver recently. Mr. Stokes has had unusual opportunities for becoming familiar with mining in various parts of the world, as is shown by the following excerpt from the preface to his book entitled "Mines and Minerals of the British Empire," published in 1908: "The bulk of this volume is based upon observations made and data collected during a tour of the Empire extending from January, 1906, to the beginning of 1908. On this journey, which the author undertook on behalf of the Mining World, Chicago; and the Rand Daily Mail, Johannesburg—and as an occasional contributor to the Financial Times, London; Straits Times, Singapore; and journals in India and Australia—a course was pursued from South Africa through Ceylon, India, Burma, Malay Peninsula, Australia, New Zealand and Canada."

Mr. D. A. Tattrie is foreman at the Richmond-Eureka min., near Sandon, while another Mr. Tattrie fills a like position at the Noble Five group, above Cody, both in Slocan district.

Mr. W. H. Taylor, of Spokane, Washington, is engineer for Mr. P. Clark, of the same city, in connection with development work to be done on a group of

mineral claims in Summit camp, near the headwaters of Tulameen river.

Mr. F. E. Thatcher, superintendent of the Rambler-Cariboo concentrating mill on Seaton creek, above Three Forks, is preparing to add zinc saving appliances to the concentrating plant already in use, the directors having authorized this addition to be made.

Mr. Wm. Thomlinson, of New Denver, has been very energetic in the work of making a representative collection of Slocan ores authorized by the Minister of Mines. In selecting Mr. Thomlinson for this work, the Provincial Mineralogist made an excellent choice, for no more enthusiastic man in this direction could well have been secured in the district, apart from the desirable qualification of competence he possesses.

Mr. Francis A. Thomson, head of the department of mining engineering at the State College of Washington, Pullman, Washington, was a visitor to Victoria during July. Afterward he went from Pullman to the Silver Hoard mine, near Ainsworth, in the capacity of consulting engineer to the company owning that promising property.

Mr. Jos. Trethewey, of Cobalt, Ontario, has been on a visit to Hudson Bay mountain, in Skeena district. With Mr. Frank Martin he is interested in the White Heather mineral claim, on that mountain. Development work is to be done on the property, with Mr. Martin in charge.

Mr. John Waldbeser is again working the Iron Mountain Co's Emerald lead mine, situated about eight miles from Salmo, in the southern portion of Nelson mining division. Local labor troubles and roads unfit for hauling ore together made it desirable to suspend work for a while. During the first three months of the year between 600 and 700 tons of ore was shipped to Trail; production was resumed in July and two cars of ore shipped.

Mr. E. E. Ward has retired from the position of superintendent of the Silver Hoard mine, in Ainsworth camp. Mr. W. S. Hawley, managing director, of Spokane, has lately given the mine his personal attention to a considerable extent.

Mr. B. H. Washburn continues to superintend the development of the Dundee mine, situated in Ymir camp. Ore has been found in the deep level adit which has been driven about 2500 ft. and at its face is nearly 1000 ft. below the surface. The ore opened is of a similar general character to that found in the shaft at about 200 ft. depth—milling ore of good average value, but with not much of it clean ore.

Mr. W. J. Watson, manager for the Tyee Copper Co., is expected to shortly return to Ladysmith, Vancouver Island, from a trip to Europe.

Mr. Phil White has returned to Ymir from Vancouver and is again at work on his sterling property, the adit on which, now in about 400 ft., entered a shoot of good milling ore about the end of June. The vein is nearly 20 ft. wide, with about 6 ft. of milling ore. The metal contents are largely iron and galena and the chief value in gold and silver. The face of the adit is about 120 ft. below the surface, but additional depth is gained as the adit is advanced into the hill.

Mr. A. D. Wheeler is meeting with encouragement in doing more development work on his Gallagher property, near the No. 1 mine, in Ainsworth camp, indications being regarded as favorable for ore being encountered shortly.

Mr. F. R. Woifle, manager of the Florence silver mine, situated on Princess creek, about four miles north of Ainsworth, states that the owners of this property are preparing to ship ore continuously. It is expected that 500 tons will be shipped during September, and a larger quantity monthly after the concentrating plant shall have been put in.

OBITUARY

John Malcolm, of Keithley creek, who died at the Royal Cariboo hospital, Barkerville, on July 14th, at the age of 75 years, was a native son of Scotland and was one of the old-timers of Cariboo district. The Cariboo Observer states that he was the last but one of a party that made its way overland from Eastern Canada to the scene of the great gold excitement on Williams creek. For 52 years he had been engaged in mining about Quesnel Forks and Keithley creek, and for a number of years had his home at the latter place. His body was buried at Barkerville.

Mr. Thomas G. Proctor, managing director of the Lucky Jim Zinc Mines, Ltd., operating the Lucky Jim mine, near Bear lake, Slocan district, was killed near his home at Oak Bay, in the vicinity of the city of Victoria, late on the night of July 9. He had taken the last car from the city and immediately after stepping off the car was struck by a passing automobile. When lifted to the sidewalk he was still alive, but expired before arrival of a doctor a short time afterward. Local newspaper reports state that the late Mr. Proctor was born in Lancashire, England, in 1862, and at the age of 14 joined the British Navy. Several years later he left the Navy service and came to America where, in the middle western states he for some time was engaged in cattle ranching. In 1891 he went to Kootenay district, with which he had since been actively connected, steadily increasing his interests in the country and taking a prominent part in the development of its varied interests. During a long period of residence in Nelson he did much to promote the advancement of that town, while his efforts were also directed toward the profitable utilization of the chief resources of Kootenay district—mining, lumbering, and the clearing and cultivation of land. He was one of a number who did much work and spent much money in developing mineral claims in Ainsworth and Slocan mining divisions of West Kootenay, and up to the time of his death he continued his activities in that direction. About two years ago he removed his office to Victoria and made his home in the neighboring suburb of Oak Bay, paying frequent visits to Kootenay from the coast. Among numerous other affiliations, he was a member of the Canadian Mining Institute, and was one of the western members who attended its semi-annual meeting held in Victoria last September. His untimely death was much deplored and his funeral numerously attended.

SLOCAN-PAYNE CO. LETS TUNNEL CONTRACT.

The Kaslo Kootenian of the 17th inst. says:

A contract was entered into a few days ago by Carlson & Co., of Spokane, for the driving of approximately 1700 feet of crosscut tunnel at the Payne mine, near Sandon, according to Manager W. E. Zwicky, of the Slocan-Payne Co., who returned Saturday from a visit to the property.

It is expected that the completion of this contract will see the ledge crosscut by the long tunnel, which already has been under way for over a year, as surveys indicate that the ledge should be found when the 1700 feet contracted for has been driven.

The firm of Carlson & Co., contractors, is headed by G. A. Carlson, who built the K. & S. as a narrow gauge line, and who also built the C. P. R. branch from Lardo to Gerrard. Mr. Carlson was at one time mayor of Kaslo and erected the A Avenue trestle and excavated the big cutting on that street in 1898.

The completion of the contract will likely mark the addition of the famous Payne mine to the list of Slocan shippers once more, as the tunnel, of which the contract is a continuation, is intended to tap the ore bodies at depth. This property still ranks as the largest dividend payer in the Slocan and one of the largest in British Columbia, having netted its first owners profits considerably in excess of one million dollars in the bonanza days when the big ore bodies were easily reached from the surface.

For the purposes of research work on the black sands of British Columbia, the following advertisement has appeared: "Prospectors send two pound sample of your black sand, stating locality taken from, to Vancouver Assay Office, Vancouver, B. C."

CAMMELL LAIRD & CO., LTD., CYCLOPS STEEL AND IRON WORKS, SHEFFIELD.

The following interesting report of current operations carried on by the well known firm of Cammell, Laird & Co., Ltd., of Sheffield, England, will engage the attention of engineering and construction men as a remarkable indication of widespread and prosperous business worthily acquired by the meritorious character of the company's manufacturers:

June 30, 1913.

Circular Letter No. 7.

Dear Sir:—The close of the first half of this year of good trade finds us still well occupied with work in our various departments.

The current year has been particularly satisfactory, in that so far we have fortunately been immune from serious labour troubles, and we can only hope that these disturbing influences will continue to be absent. There are numerous applications for advanced wages and shorter hours from various trades, and it is hoped that any difficulties will be mutually arranged without recourse to more serious measures.

At Cyclops Works, all departments are well occupied, the armour finishing shops being very busy, while the hammers engaged on general forgings are working full time.

In the steel department, a new roll turning shop has just been erected, and will be in full working order shortly.

You will have noticed from the list of important orders we have sent you that there is no lull in the rush of orders for the file department, which is working at the highest pressure. The further extensions are now approaching completion, but at present we are unable to utilize any portion.

The following are a few of the larger orders received since our last writing: Nienstaedt & Co., Copenhagen, 669 doz. files.

Nield & Co., Buenos Aires, 1595 doz. files.

Not only has the Prince Rupert Exhibition

recognized the importance of the mineral industry of the north by giving more prizes, cups and larger awards than has ever been offered at a previous British Columbia exhibition, but

The Management Extends a Cordial Invitation

to manufacturers and selling agencies of mining machinery to display their products.

THE NORTH'S FIRST EXHIBITION

Will be held at

PRINCE RUPERT---Sept. 24-26

For further information write L. BULLOCK-WEBSTER, Secretary.

The British Columbia Agricultural and Industrial Association

J. J. H. Gearing, Moscow, 1190 doz. files.

Chadburns S. T. Co., Liverpool, 186 doz. files.

Matheson A. & Co., Glasgow, 156 doz. files.

Bristol Tramways, Bristol, 111 doz. files.

Vickers Ltd., Barrow, 303 doz. files.

Vickers, Ltd., London, 312 doz. files.

Fairbairn Macpherson, Leeds, 539 doz. files.

Laughland, MacKay & Co., London, 294 doz. files.

Cravens Ltd., Darnall, 1,993 pieces nickel steel.

Scrutton, R. L. & Co., London, 1,026 doz. files.

Beardmore, Wm. & Co., Ltd., Glasgow, 148 doz. files.

Great Western Railway, Swindon, 80 bars double shear steel.

Union of South Africa, London, 65 cwt. cast steel.

Laxevaags, M. and J., Bergen, 121 doz. files.

Brown, Douglas & Co., London, 562 doz. files.

Shaw, J. & Sons, Ltd., Wolverhampton, 10 tons spring steel.

Rotherham Forge Co., Ltd., Rotherham, 50 tons ingots.

Railway Department Orders.

Midland Railway, 100 locomotive tyres.

Chinese Government railways, 78 locomotive tyres.

Chinese Government railways, 39 locomotive axles.

Paraguay Central Railway, 1,600 springs.

Leopoldins Railway, 108 locomotive tyres.

Leopoldins Railway, 54 locomotive axles.

Great Eastern Railway, England, 310 springs.

Newcastle Corporation Tramways, 350 tram tyres.

North Eastern Railway, 50 tyres.

Great Eastern Railway, 100 axles.

Federated Malay States Railways, 110 springs.

Cardiff Railway, 72 springs.

Lancashire & Yorkshire Railway, 200 springs.

South Manchurian Railway, 250 axles. Cordoba Light, Power & Traction Co., 40 tyres.

Cordoba Central Railway, 100 tyres. Buenos Aires & Pacific Railway, 500 tyres.

Buenos Aires & Pacific Railway, 800 axles.

Western Australia, 25 sets wheels and axles.

Buenos Aires & Pacific Railway, 4 crank axles.

Buenos Aires & Pacific Railway, 8 locomotive straight axles.

Pernambuco Tramways, 240 tyres.

Pernambuco Tramways, 120 axles.

Barranquilla Railways, 50 springs.

North Eastern Railway, 2,000 tyres.

North Eastern Railway, 1,000 axles.

Great Western Railway, 40 locomotive tyres.

Victorian Government, 300 tyres.

At our Grimesthorpe works, great activity prevails in all departments. Owing to extensive repairs to furnaces, however, our output of steel recently has been considerably interfered with.

We have under consideration the entire reconstruction of our No. 1 tyre plant, of which the new cutting up shop (just completed and now working), is the first portion.

All the forgings for the two light armoured cruisers, "Arethusa" and "Undaunted," are now completed, whilst those for the "Valiant" and for the engineering and marine requirements generally are engaging our attention, as also a quantity of forged steel gun shields.

We have just delivered to a local engineering firm a steel casting weighing 72 tons for a special design of gun straightening press. We have also in hand castings for various ships now being built at Fairfield and Birkenhead.

We have recently completed in our No. 2 press shop a new reheating furnace, the approximate dimensions of which are 31 feet by 10 feet 6 inches.

The shell department is now engaged in the production of all classes of shell from 4 inches upwards.

At Birkenhead, H. M. S. "Garland," a torpedo boat destroyer of a special type, has been launched and is rapidly preparing for her steam trials. It is interesting to note that the company have taken a leading part in the development of this class of vessel. Their designs were accepted by the British Admiralty for two of the first batch of six boats ordered in 1892, and since then 46 destroyers have been turned out by the company, among them craft for the British, Russian, Chilean and Greek navies. The most powerful vessel of this class yet built was constructed at the company's works, namely, H. M. S. "Swift," of nearly 2,000 tons, with a speed of 36 knots or 42 miles per hour.

Orders have been obtained for several boilers for the Admiralty and other customers.

The S. S. "Royal George" has now completed her repairs and sailed. These repairs are among the most extensive which have been carried out in the port of Liverpool, and it is only due to the splendid modern plant for dealing with such work that the company possesses that they have been carried out so rapidly.

A quantity of other repair and overhauling work is in hand. Yours faithfully,

CAMMELL LAIRD & CO., LTD.

Arthur D. Wedgwood,
Managing Director.

To Surveyors and Prospectors

Messrs. TEMPLE & TRACY having purchased the Ranching and Store business near **Hanceville, B.C.** formerly owned by Mr. Norman Lee, wish to announce that they are prepared to

Outfit and Equip MINING AND SURVEYING PARTIES

who may be going into the Chilcoten country or towards Bella Coola, with

Provisions, Tools and Pack Horses

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Varied and Ample Stock of Supplies Always Kept on Hand

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Hanceville, B.C.



DEPARTMENT OF LANDS.

CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under Timber License No. 33093, now expired on Cortes Island, Sayward District, notice of which appeared in the British Columbia Gazette on the 27th of December, is cancelled, and that said lands will be open to entry by pre-emption at 9 a.m. on Monday, the 25th of August, 1913.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B.C., 17th May, 1913.



NOTICE OF CANCELLATION OF RESERVE

NOTICE IS HEREBY GIVEN that the reserve existing on lands embraced in Township 24, Rupert District, notice of which, bearing date June 12, 1912, was published in The B. C. Gazette on June 13, 1912, be cancelled to permit of the pre-emption of said lands under the provisions of Section 10 of the "Land Act" on and after 9 o'clock in the forenoon of Friday, October 17, 1913; all such pre-emption entries to be made in accordance with existing surveys varying in area with a maximum of 40, 80 or 160 acres to each pre-emption, as the said lands may be subdivided by a survey.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B. C.
9th July, 1913.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve existing by reason of the notice published in the British Columbia Gazette of the 27th December, 1907, is cancelled in so far as the same relates to the following described lands, so as to permit of the sale of the timber standing thereon:—

Those certain parcels or tracts of land situated in New Westminster District, and which may be more fully described as follows:—

(1.) Commencing at the southerly southeast corner of Lot 918, New Westminster district; thence south 15 chains along the east boundary of Lot 2563A; thence East 20 chains, more or less to the east boundary of Lot 569; thence northerly along the east boundary of the said Lot 569 a distance of 15 chains, more or less, to the southwest corner of said Lot 918; thence easterly along the south boundary of said lot to the point of commencement; containing by admeasurement 30 acres, more or less:

(2.) Commencing at the most easterly southeast corner of Lot 569, New Westminster District; thence south 10 chains, thence west 40 chains, more or less, to the fractional east boundary of Lot 569; thence north along said boundary a distance of 10 chains, more or less, to an angle of said lot; thence easterly along the fractional south boundary of said lot to the point of commencement; containing by admeasurement 40 acres, more or less.

ROBT. A. RENWICK,
Deputy Minister of Lands.

Department of Lands,
Victoria, B. C.



NOTICE OF CANCELLATION OF RESERVE.

Notice is hereby given that a reserve, the notice of which appeared in the B. C. Gazette of December 27th, 1907, is cancelled, in so far as it relates to lands formerly held under Special Timber Licences Nos. 32710, 38000, 40345, 10419, 40346, 40127, 31332, 11693, 40347, 40349, 40129, and 33317, all in Kamloops Land District, and the said lands will be open to entry by pre-emption at the hour of 9 o'clock in the forenoon on Friday, October 17th, 1913.

ROBERT A. RENWICK,
Deputy Minister of Lands.

Lands Department, Victoria, B. C.,
15th July, 1913.



NOTICE OF CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under expired Timber Licence, No. 37459, notice of which appeared in the B. C. Gazette on the 27th of December, 1907, is cancelled.

The said lands situated on Lasqueti Island, and covering portions of Sections 11, 12, 14 and 15, will be open to pre-emption entry at 9 o'clock in the forenoon on Monday, October 20, 1913; all applications to be made for legal subdivisions of said Sections 11, 12, 14 and 15, Lasqueti Islands, which are within the boundaries of lands formerly covered by said licence.

R. A. RENWICK,
Deputy Minister of Lands.

Lands Department, Victoria, B. C.,
12th July, 1913.



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under expired Limber Licences Nos. 39195 and 38196, situated in the vicinity of Powell Lake, New Westminster District, is cancelled, and that said lands will be open for entry by pre-emption on Monday, the 3rd day of November, 1913, at the hour of 9 o'clock in the forenoon.

R. A. RENWICK,
Deputy Minister of Lands.

Lands Department, Victoria, B. C.,
30th July, 1913.



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under Timber License No. 31020, now expired, situated at Pender Harbor, notice of which appeared in the British Columbia Gazette on the 27th of December, 1907, is cancelled, and that said lands will be open to entry by pre-emption at 9 a.m. on Monday, the 25th day of August, 1913.

R. A. RENWICK,
Deputy Minister of Lands.

Lands Department,
Victoria, B.C., 17th May, 1913.



NOTICE OF REMOVAL OF PROVINCIAL ASSESSOR AND COLLECTOR'S OFFICE.

Notice is hereby given that, on and after June 5, 1913, the Provincial Assessor and Collector's Office, Parliament Buildings, will be removed to the Belmont House, rooms 116, 117, 118, corner of Government and Humboldt Streets, Victoria, B. C.

All assessed taxes on real property, personal property and income, including the taxes due by corporations and others under the "Taxation Act," also all rural school taxes under the "Public Schools Act," for the Victoria assessment district, will, therefore, be payable in future at the above-named offices.

Taxpayers are reminded that in order to obtain the discount of 10 per cent. on the current year's taxes payment must be made to the Collector at the above address on or before the 30th day of June, 1913.

All communications respecting taxes may be addressed to the undersigned, Postoffice Drawer 1597, or to the above address.

E. E. LEASON,
Provincial Assessor and Collector,
Victoria Assessment District.
Dated at Victoria, B. C., June 2, 1913.



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve existing upon Crown lands situated in Range 4, Coast District, and more particularly described from the southwest corner of Township 10, bearing date of the 25th day of May, 1910, and published in the British Columbia Gazette on the 26th day of May, 1910, is cancelled in so far as same affects the acquisition of said lands under the provisions of the "Coal and Petroleum Act."

R. A. RENWICK,
Deputy Minister of Lands.

Department of Lands,
Victoria, B.C., May 5th, 1913.

A handsome block of ore, weighing considerably more than one hundred and fifty pounds, was brought down from the Revenue the latter part of last week, says the Kaslo Kootenaian of the 24th inst. The ore was forwarded to the R. G. Barnes syndicate, Calgary, which concern took a bond on the Revenue this summer.

GREEN LAKE**Mining and Milling
Company, Limited**

Office—806 Rogers Block,
Vancouver, B.C.
V. LLOYD-OWEN, SEC. TREA.

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One double-drum hoist, drums 8 ft. diameter, 6 ft. 3 in. wide, frame 24 feet x 11 ft. 6 ft. cylinders, 14 x 18, capacity, 2½ tons at 700 feet per minute. One 100 h. p. and one 75 h. p. boiler, both tested to 100 lbs. pressure. One Northey sinking pump, 8 in. x 4 in. x 12 in. One Worthington duplex pump, 20 x 10½ x 10. One 40 h. p. Jenckes Machine Company engine, 10 x 14.

Address

The Canadian Copper Company
Copper Cliff, Ontario.

There are 14 miners at work in Summit Camp, and it is likely the number will be considerably increased with the coming of warmer weather.

The F. H. Lantz Company, Ltd.
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Real Estate Loans; one of the Largest Lists of
Speculative and Investment Real Estate in the City.
Private Funds to Loan at Current Rates. No delays.

The F. H. Lantz Company, Ltd.
342 Hastings Street, West, Vancouver, B. C.

**CANCELLATION OF RESERVE.**

Notice is hereby given that the reserve covering Lot 49, Range 1, Coast District, notice of which appeared in the British Columbia Gazette on the 27th of December, 1907, is cancelled, and that said lands will be opened to entry by pre-emption at 9 a.m. on the 11th day of August, 1913.

R. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B.C., May 5th, 1913.

**CANCELLATION OF RESERVE.**

Notice is hereby given that the reserve covering a parcel of land situated in the vicinity of Howe Sound, formerly covered by Timber License No. 17452, now expired, and more particularly described as: Commencing at a post planted on the southeast corner of Lot 835, New Westminster District; thence north 40 chains; thence west 40 chains, more or less, to the east boundary of Lot 3200, New Westminster District; thence south 72 chains, more or less to the shore of Howe Sound; thence following the shore line in a northeasterly direction to the point of commencement, notice of which appeared in the British Columbia Gazette on the 27th of December, 1907, is cancelled and the land will be open for entry by pre-emption on the 1st day of August, 1913.

R. A. RENWICK,
Deputy Minister of Lands.
Department of Lands,
Victoria, B.C., May 5th, 1913.

A force of 200 men is employed at the coal mine operated by the Inland Coal and Coke Co. of Merritt.

INDEX

Subject	Page
Annual Report of Minister of Mines	5
Summary Review of Minister of Mines Report	12
The Twelfth International Geological Congress	14
Provincial Mining News	16
Improvements at the Consolidated Co's Smelting Works	19; 25
Editorial	20
Latest Metal Markets	21
Coast and Island Mining—	
Interesting Interview with Granby	
Vive-president	22
Progress at Portland Canal	22
Flotation Process at Britannia	23
The Mineral Exhibit at Vancouver Exhibition	23
Aufas Gold Mines Ltd.	23
Favorable Outlook for the Properties of B. C. Coal & Oil Development Co.	24
Prospectors Busy in Hazelton District	24
Mining Development Around Hazelton	24
Ol Freibergers in America	25
Prince Rupert Exhibition	25
Personal and General	26
Obituary	28
Slocan Payne Co. Ltd's Tunnel Contract	28
Cammell Laird & Co. Ltd. Cyclops Steel and Iron Works, Sheffield	28
Canada's Naval Policy	33
Transducing B. C.	34
Coal Miners' Strike	35
The Military Spirit	35

MINING NOTES.

The first sod for the terminals of the Pacific Great Eastern at North Vancouver was turned on the 10th inst. by Sir Richard McBride.

A test car of zinc ore was recently shipped by the Utica Mines, Ltd., to a Colorado smelter.

A shaft is being sunk on the coal property of the Midway Coal Co., at Midway, and they report the finding of some very good grade coal.

The Vancouver Chamber of Mines has set up an exhibit of Provincial minerals in its new headquarters and will show collections from nearly every mining camp in the province.

Two cars of silver lead ore, running \$50 a ton, have just been shipped from the Sunnyside, at Rock Creek, by E. Williamson.

The Granby Company is building some 62 miles of trails connecting their different groups of mining claims at Granby Bay.

FOR SALE

Three 125-ton copper smelting furnaces. Four Cornersville blowers, capacity, 752 cubic feet per revolution, direct connected to Erie engines. Three converter stands and fourteen shells. 84 x 126, for electric drive.

Address

The Canadian Copper Company
Copper Cliff, Ontario.

MINING STOCK QUOTATIONS.

Supplied by Waghorn, Gwynne & Co., Stock-Brokers, Vancouver, B.C.

LISTED STOCKS.

Spokane.

	Bid.	Asked.
Ajax .....	.083	.17
Alameda .....	.003	.01
Alhambra .....	.043	.10
Ambergris .....	.05	.073
Am. Comd'r .....	.003	.013
B. C. Copper	4.25	4.50
Black Horse .....	.013	.023
Bullion .....	.01	.02
Bullwhack .....	.48	.52
Caledonia .....	.233	.25
Canadian Cons.	45.00	75.00
Carbonate Hill .....	.013	.04
Copper King .....	.023	.023
Copper King (Che.) ..	.23	.23
Federal, pref.	43.00	51.00
Federal, com.	16.00	23.00
Gertie .....	.05	.063
Granby Smelter	68.00	70.00
Happy Day .....	.01	...
Hecla	2.20	...
H. E. M. ....	.073	.093
Hypothek .....	.023	.023
Idaho Giant .....	.013	...
Idora Hill .....	.02	.023
International C. & C. ..	.37	.41
Jack Walte .....	.073	.09
Laclede .....	.01	.03
Lucky Calumet .....	.013	.023
Lucky Jim .....	.133	.17
Marsh .....	.223	.263
McGillivray C. & C. ..	.15	.183
Missoula Copper .....	.02	.023
Monitor .....	.013	.023
Moonlight .....	.043	...
Nabob .....	.013	.013
Nugget Gold Mines ..	.25	.33
Oom Paul .....	.01	.03
Purltan .....	.133	.19
Rambler Cariboo .....	.853	.90
Rambler Cariboo Ext. ..	.04	.053
Silver Cable .....	.013	.023
Snowshoe .....	.39	.45
Snowstorm	1.35	1.47
Standard S. L. ....	.033	.04
Stanley	1.92	1.97
Stewart	1.25	...
Tamarack Con. ....	.60	1.00
Utica .....	.16	.193

Industrials

	Bid.	Asked.
Wash. Water Power Co. ..	133.00	136.50
Western Union Life ..	135.00	145.00
Interstate Con. Tel.	20.00	...
Tamarack and Custer ..	1.01	1.26

Cobalt Stocks

	Asked.	Bid.
Balle .....	.093	.093
Beaver Consolidated ..	.403	.393
Buffalo	2.30	2.10
Chambers-Ferland .....	.29	.233
Great Northern .....	.09	.093
City of Cobalt .....	.39	.333
Conlagas	9.25	9.10
Crown Reserve	3.65	2.58
Foster .....	.11	.093
Gnfford .....	.063	.06
Gould .....	.033	.033
Green Meehan .....	.013	.013
Hargrave .....	.083	.08
Mc Kln. Dar. Savage ..	1.98	1.97
Nipissing	9.15	9.00
Ophir .....	...	.04
Otlisse .....	.02	.013
Peterson Lake .....	.253	.253
Rochester .....	.043	.04
Right of Way .....	.053	.08
Silver Leaf .....	.043	.04
Temiskaming .....	.34	.333
Trethewey .....	.34	.323
Wettlaufer .....	.15	.15

Porcupine

	Asked	Bid
Crown Charter .....	.003	.003
Dome Extension .....	.063	.06
Foley O'Brien .....	...	.16
Hollinger	15.50	15.15
Jupiter .....	.37	.36
North Dome .....	.60	...
Pearl Lake .....	.30	.293
Porc. Imperial .....	.023	.02
Preston East D.04	.033
Rea Mines15
Swastika10	.093
Vipond20	.193

Sundry

C. G. F. S.05	.043
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VANCOUVER STOCK EXCHANGE.

Listed Stocks.

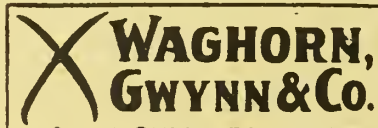
	Bid.	Asked
Dominion Trust Co.	106.00	115.00
Great West Per. A.	12600	12800
International C. & C. ....	.34	.36
Vancouver Development ..	...	12.00
Alberta-Canadian Oil ..	...	.02
Nugget Gold Mines .....	...	.26
Portland Canal .....	...	.033
Stewart M. & D. Co. ....	.20	...

Unlisted Stocks.

B. C. Copper	2.00	3.00
B. C. Per. Loan. A. ....	...	133.00
B. C. Trust Co.	101.00	110.00
Granby	61.50	...
Northern Crown Bank .....	...	90.00
National Finance .....	...	110.00
Pacific Coast Fire .....	...	123.00
Pacific Loan Co.	23.00	...
Can. Cons. M. & S.	70.00	...
American-Canadian Oil ..	...	.05
Amal. Dev. ....	...	.003
B. C. Refining Co. ....	.45	...
Can. Call Switch .....	...	.34
Can. Pac. Oil of B. C. ....	...	.05
Can. N. W. Oil .....	...	.003
Coronation Gold .....	...	.90
Glacier Creek .....	.05	...
Grand Trunk Lands .....	.05	.07
Hudson Bay Fire	100.00	...
Kootenay Gold .....	...	.09
Lucky Jim Zinc .....	...	.053
McGillivray Coal	13.50	...
Nicola Valley C. & C. ....	...	13.00
Rambler Cariboo .....	.34	...
Royal Collieries .....	...	.02
Snowstorm .....	...	.30
Standard Lead .....	...	1.15
Stewart Land	6.00	...
Red Cliff Min. Co. ....	...	.09
Western Union Fire	70.00
White Island Sulphur ..	1.35	2.00
World Building	6.00

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All Old Boys of British Public Schools now in Vancouver Island, B. C., are requested to communicate the following information to the Secretary of the Association.
(1) Name. (2) Present address.
(3) Old School and date of residence there. (4) Present occupation.

A copy of the constitution and by-laws of the Association will be sent to every old public school boy who is not already a member thereof.

It is hoped that all may join, so that a complete register of old public school boys now in Vancouver Island may be obtained.

Old members who have not done so are requested to notify the Secretary of any change of address.

Address to the Secretary,

A. R. SHERWOOD

BOX 812. VICTORIA, B.C.

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CANADA'S NAVAL POLICY.

Under the above caption the Victoria Week of the 5th inst. has the following excellent review of this subject, and gives utterance to certain generally-known but seldom referred to facts in these plain words:—

Now that matters have cooled down a bit and it is certain that there will be no general election for the next two years, it may be well to review briefly the effect of the defeat of Mr. Borden's naval resolutions, and also to canvass the reasons why no appeal is to be made to the constituencies on the sub-

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ject. Mr. Borden put up a good fight, but he was foredoomed to failure from the start, and even at this short distance of time it is possible to see more clearly than in the dust and turmoil of the battle why his efforts were neutralized by the determined attitude of the Senate. The truth of the matter is that the Senate not merely carried out the wishes of the Liberal leader, but knew that in doing so it was acting in accordance with the honest opinion of so large a number of Canadians as to leave it uncertain whether that number would not constitute a majority. Outside of British Columbia there is no enthusiasm in Canada for a naval policy which involves the expenditure of money. The Maritime Provinces are mildly in favor of such a project, because they would benefit locally, both by the establishment of shipbuilding works and the probable location of a fleet unit on their coast. Quebec is avowedly antagonistic, and in the opinion of the best authorities an appeal to the constituencies in that Province would leave Mr. Borden with not more than three followers. Jumping for a moment to the Prairie Provinces, the result would be at least problematical. There would be a large adverse vote made up of lower European nationalities, who take no interest in Canadian affairs beyond extracting the maximum of wealth from her soil, and American immigrants whose ideas are alien to British supremacy and who are as firmly convinced that Canada's salvation in military and naval affairs is to be worked out with the United States as they were two years ago that her financial salvation lay in Reciprocity. At present the political complexion of the Prairie representation gives a large Liberal majority and it would therefore be quite an optimistic view to assume that Mr. Borden's policy would make an even break there. It is more than doubtful if the enthusiasm of British Columbia and the unenthusiastic approval of the Maritime Provinces could offset the antagonism of Quebec and the indifference of the Prairies, and it is therefore perfectly

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certain that the issue would rest with the Ontario constituencies. The Week has always believed that in this matter Ontario would prove to be "Little England." In the first place it has a large farming class with which rigid economy is the first law of Nature. Then it has been brought up on the Liberal gospel preached for so many years by George Brown and faintly echoed by J. A. Macdonald in the columns of the Toronto Globe. The Globe is blindly partisan and distinctly anti-British. Its editor is a notorious libeller of English people and English institutions. In his heart he believes that the true Canadian policy is one of union with the States; he was the most strenuous advocate of Reciprocity, and he cannot now disguise the fact that he is restive under the yoke of British connection and would throw it off. Such a man and such a paper are not likely to favor a contribution in any form, and may be counted on at all times to recede the parrot-like cry "A Canadian Navy, built in Canada, manned by Canadians." Now along comes Mr. R. R. Hall, a former M.P. for Peterborough West, who is visiting Victoria. He ventures the following opinion:—"I am quite convinced that if we were to have an election now there would be a tremendous change in the representation of the Province of Ontario. There is not much sentiment in Ontario in favor of the creation of a navy for Canada, either as a local fleet or as one in co-operation with the imperial navy, the general opinion being that it is a luxury which can well be done away with. . . . The policy of contributions is not popular except amongst the so-called imperialists, who have their headquarters in Toronto. Outside of Toronto there is practically no naval sentiment at all, and it will require a good deal of flag-waving to stampede the people into any support of the Borden policy of contribution." Mr. Hall may not be an oracle but he is an ex-Liberal member and when he ventures to voice so frank an opinion, it may be accepted as representing that of a large section of the Province. All this goes to show the odds against which Mr. Borden is fighting and the necessity for a campaign of preparation and education before the constituencies can be brought to pronounce favorably on any expenditures for naval purposes. Mr. Borden cannot too soon formulate his permanent policy; place it before the House in fullest and final detail; give the country an opportunity of becoming familiar with it, and then, when the time comes, the constituencies will at least be in a position to pronounce upon something which they will have considered in all its bearings.

THE SENATE RECIPROCATES.

It is some time since relations between our country and Germany have been as friendly as at present. It is appreciated in Germany that the Kaiser's kindness in releasing the British officers has been most handsomely acknowledged by the action of the Canadian senate in rejecting the Borden navy bill.—Punch. (London, Eng.)

TRADUCING BRITISH COLUMBIA.

Among the many activities, one might almost say the recognized functions, of a strictly religious newspaper as conducted these days is the bearing of false witness against one's neighbor, says the Victoria Week of July 28, ult., in a timely editorial denouncing those religious bodies who every summer accept British Columbia's hospitality and then go back East and black-guard the communities here, whose bread and salt they have eaten. The Colonist very properly calls attention to the false statements contained in a recent issue of "The Canadian Churchman" as to the moral standard of this Province. These statements are said to be based upon representations made, at a recent Presbyterian Synod in Toronto and a Methodist Conference in Vancouver. With reference to the Vancouver Conference there is only too much reason to believe that the good men who indulged in sensational charges had been reading a certain well known sheet which is flaunted at every street corner and which revels in the picturesque portrayal of vice. With respect to the Synod in Toronto, it would be too much to expect that any religious convention could be held in that "City of the Good" without violating the teaching of its Master, "Qui vestrum immunis est a peccato primus in eam jaciat lapidem." The Week agrees with The Colonist that matters might be better even in British and Victoria, but that they are worse than in other parts of Canada it denies, and that there is any possible justification for singling out this Province for such a condemnation is a fallacy. It is not the first time that religious bodies have gone out of their way to bear false witness against their neighbor, and probably the men who are responsible little realize what harm they do to the cause of religion, and how they set back the clock of reform when they class themselves with

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people ready to make false charges on flimsy evidence and show themselves altogether lacking in that spirit of charity with which they of all men should be expected to regard their fellows. It has always been a puzzle to The Week how the average citizen can live in Victoria, find it a good place to live in, and see none of the nasty things which a visiting religious convention seems to find out inside of twenty-four hours.

THE COAL MINERS' STRIKE.

Neither the representative of the coal operators, nor the agent of the miners is to be complimented on the manner in which they have seen fit to anticipate the visit of Hon. T. W. Crothers, the Minister of Labor, who is visiting the coast in order, if possible, to influence a settlement of the differences which have led to the present disastrous strike, says the Victoria Week of the 12th inst. Both Mr. Coulson and Mr. Farrington have seen fit to notify Mr. Crothers that he is not wanted, and that they can settle the dispute themselves. These are the express words used by Mr. Coulson and the effect of the words used by Mr. Farrington. Both miss the real point,

which is that capital and labor owe some duty to the public and to the State, and that their bickerings and quarrellings may reach a point when the public interest demands intervention by the only authority which can intervene with effect. That point has been reached in the Vancouver Island coal strike, and whether the parties like it or not, the government will intervene and the strike will be ended. The capitalist may say, "Hands off! I have invested my money and I must be left alone in the management of my business enterprise. You cannot compel me to keep my mines open, and if you interfere I shall close them." The miner may say, "You cannot compel me to work unless I am willing to do so." All this may be granted, but the public will also say, "We need coal, we need enterprise to support our population, and we will not allow either employer or employee to ruin the country with their factious disputes." If they will not keep the mines going, the government may have to do so for the people. And this is the pass to which things have nearly arrived on Vancouver Island.

THE MILITARY SPIRIT.

In spite of Socialists, disloyalists and cowards, it is perfectly obvious that the military spirit is very "militant" in British Columbia, says the Victoria Week of the 5th inst. During the last week approximately 1,200 men have been under canvas at Sidney, including detachments from the mainland. The commanding officer was Lieut.-Colonel R. G. Edwards Leckie, a distinguished officer who saw active service and rendered a good account of himself in the Boer war. The camp was visited and inspected by General Sir Ian Hamilton and Col. the Hon. Sam Hughes Minister of Militia. They said many good things about the regiments, among them that better material was not to be found within the Empire. They expressed the wish that in the near future it might be possible to considerably extend the period of training; and finally they were so enamored of the camping ground that the Minister opened up negotiations for its purchase by the Dominion government. The eight days' manoeuvres wound up with an attack on the city of Victoria, after which the visiting troops embarked for Vancouver. At the same time Lieut.-Colonel Currie was commanding the men of the Fifth Regiment in the camp at Macaulay Plains. This encampment was also inspected by the visiting general and minister, and special note taken of the brilliant artillery practice for which the Fifth is famous. The proceedings at both camps passed off without a hitch; the manoeuvres were admirably executed, and the province was furnished with one more excuse for its fondness for military training and its firm belief that "God helps those who help themselves."

NEWSPAPER MERIT.

Gas pipes made out of newspapers are a late invention. Some newspapers make better gas pipes than others.—Philadelphia North American.

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AGITATORS GETTING THE WORST OF IT.

The British Columbian correspondent of Toronto Saturday Night, referring to the threats of that despicable band of outlaws known as the I.W.W., to engineer a strike of the employees of the lumber industry in British Columbia, Washington, Idaho, Oregon and Montana by the I.W.W. on May 1st, states that it is not going to be carried out. Commenting on the matter, the Toronto weekly's correspondent states:

Lumbermen in the four states mentioned and in this province need about 15,000 men in the camps, and for a long time agents and spellbinders of the I.W.W. have been at work sowing the seeds of discord and discontent, not only among the loggers and others engaged in lumbering, but also in the railway construction camps. The employers kept themselves informed of what was going on, and quietly made plans to import men from Eastern Canada and the Eastern States. Employment at good wages with board included in railway and logging camps was offered down east, and as a result this month is witnessing a large influx of laborers from there. Loggers, lumber and shingle mill owners and railroad contractors joined in this means of anticipating the threats of Joshua Ettor and other I.W.W. leaders to cause a cessation of work on May 1. Ettor is the man who not long ago was detained at the border line and not allowed to enter British Columbia, on the ground that he was a professional agitator. Logging operators declare that they will not wait for anarchists and agitators to go into the camps and spread dissatisfaction among the workmen, but will carry the war to the I.W.W. They will be ready to fill the places of all who prefer to quit work and follow the agitators into the city for "picket duty" at \$1 per day rather than get employment in the logging camps at from \$2 for com-

mon labor to \$5 to \$6 per day for men in responsible positions, to which is added free board. Hereafter the effort of employers in the lumbering industry will be to weed out foreign agitators of anarchic tendencies who preach "I Won't Work" doctrines. It is claimed that railroad contractors in this province and in the four states named require from 5,000 to 15,000 more men for the summer's work. In British Columbia, especially, a big programme is mapped out on the railways. So far there has been little trouble in the railway construction camps, but trouble is brewing. A strike was declared the other day in a Kettle Valley construction camp near Naramata, B.C., the ostensible reason being for an increase in pay from \$2.75 to \$3 per day. The contractors consider the strike to be the commencement of a general strike over the whole of the Kettle Valley railway camps. I.W.W. agitators and organizers have been exciting the men for some months past, and many have left within the past few weeks for over the border line.

The stuff of which I.W.W. heroes is made was illustrated in Seattle recently. R. H. Havlan, one of the Pacific slope leaders of that organization was sentenced by Judge Gordon to twenty days in jail for kicking a boy. As soon as he was locked up he decided he would not work in jail, he would starve first. He got his organizing abilities to work, and soon started a hunger strike upon the lines of the English suffragettes. Each follower swore that he would subsist upon a coffee diet forever rather than raise his right hand in the city's service. Halvan's devotion to the principle of "I Won't Work" lasted but little longer than that of his followers, and that was over just one meal. The smell of odoriferous sausage was too much for them and their principles. The chief jailer is reported to have said that a meeker and humbler and hungrier man never faced

him than Halvan when the latter hove into view the following morning. There was no forcible feeding needed. All the bravado and the vaunted disregard of the laws of nature and man had fled. He had had enough of the coffee diet, and he expressed a hearty desire to exchange the labor of his hands in the jail yard for three square meals a day.

MR. R. F. GREEN AND HIS WORK.

A recent issue of The Revelstoke Mail-Herald contains the following appreciative reference to the work at Ottawa of Mr. R. F. Green, M.P.:

"It is with pleasure that the editor of this paper publishes the good news on the front page of this issue respecting the Revelstoke Park, Post Office and opening of the Dominion lands in the Railway Belt. These three highly important matters mean much to this city as every citizen with an atom of discernment can easily see. That the visit of Messrs. Gibbons and McSorley to the Federal capital has been so eminently successful is due solely to the efforts and personal influence of our esteemed member, R. F. Green, M.P.

"It will be indeed gratifying to his many supporters throughout the Kootenay to have the latest news of his still further achievements for his constituency. Mr. Green has always been recognized as a live man of affairs, but for a single member of parliament to have accomplished what he has done under his already short term of office is phenomenal. Some credit is also due the local Progress club as being the first public organization to move in the matter of the Revelstoke Park, while it will also be gratifying for the members of the board of trade to see that the subject that has occupied so much time at their meetings is finally settled."

From other parts of the constituency come similar references to Mr. Green and his work.

DISALLOWS FRENCH NOVELS—BUT

John Bull is an inconsistent old fellow in some respects, observes the Phoenix Pioneer. He rolls his eyes in pious horror and sternly forbids the publication in England of certain English translations of French novels. He, however, sanctions the publication and sale of certain literature only to be obtained from the suffragette headquarters and bookstalls, the contents of which, according to several well-known English editors, are absolutely unprintable. It has also been declared by the same authority that if the tenets of this literature advocates were adopted, it would throw the British people back into that condition of affairs which marked the decadent days of the Roman empire. There is much more behind the suffragette movement than appears on the surface, and the sooner men and women realize it the better it will be for society at large.

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AN OBJECT LESSON.

The Standard silver-lead mine at Silvertown, with its regular \$50,000 per month in dividends, is an object lesson in successful mining, says the Nelson Daily News of the 15th inst. There are many other good mines now being developed in the Slocan, which can be counted upon to make a corresponding good showing.

A NATIONAL DUTY.

The following remark on the necessity of universal military service made recently by Major Snow at Vancouver, head of the Canadian Cadet Movement, is truly significant and should be taken to heart by all young Canadians:

"Those who attack the principle of universal training are evidently not aware of the fact that the law of Canada now recognizes the principle that all men, with few exceptions, are responsible for the defence of their country. Between the ages of 18 and 45 men are now liable to be called upon for military service in the defence of their country."

OBVIOUSLY.

After what the Laurier Senators did to hamstring the mother country in her work of defending the Empire, Sir Wilfrid will be inclined to assure the next crowd he addresses that Canada's "neutrality" would be respected by Germany should the latter go to war with Britain.—"Toronto Mail and Empire."

LOOKING TO KOOTENAY.

Canadian Finance, the well known Montreal authority on railway, as well as financial and other such matters generally, in its last issue published an interesting article on "Railway Construction in British Columbia," in the course of which it said:

"As for the future it is only necessary to consider the great and ever-growing activity on the part of the railways. One of the most significant features is the double tracking and re-grading of the C. P. R. from Calgary through the Rockies. There is no doubt at all that the railway is seriously determined not to allow any other company to snatch its position by strategy or superior grades. It has two routes from Calgary through South British Columbia, and it is now practically rebuilding the northernmost. The southern route is being considerably shortened by the line through Princeton, Hedley and Penticton to Midway, Grand Forks and Nelson. The section from Hope to Penticton is all that remains to be built, and when it is completed the coast will be in direct touch with the rich valleys of the interior mining and agricultural districts of the famous Similkameen, Okanagan and Kootenay valleys. As for the northern route, the line is being re-graded from Calgary through the Rockies and double tracked. The re-grading itself is entailing

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It is worthy of note, says the Nelson Daily News of the 15th inst., in commenting on the above, that the opening up by the Canadian Pacific railway of its new direct line across southern British Columbia is already attracting outside attention to this section of the province. But the opening of the line itself will bring still greater benefit, for it will not only attract further attention on the outside, but the diversion of traffic this way will also make people personally acquainted with this section, and its resources and possibilities. The benefit it is not necessary to enlarge upon.

Superintendent Connors of the gold dredge at Goldhill is well satisfied with the result of operations so far, says the Kaslo Kootenaiian. Although the gold being taken up is very fine, about two-thirds of it being saved, and Mr. Connors hopes to still further improve the plant so as to make a better saving than this. The operations of the dredge indicate that there is gold among the river boulders and it now appears a certainty that when all the required dredge alterations to meet local conditions are made, gold dredging on the Lardo river will be a decided success.

Mr. R. R. Hedley, M. E., and Mr. R. Thompson, have been engaged examining the copper ore bodies at Tassoo Harbor, Moresby Island.

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p.m.	p.m.	a. m.			p. m.	a. m.
2 00	3 00	7 45	0 Victoria	6 30	10 55
2 08	3 10	7 53	1 Hillside Ave.	6 22	10 45
2 20	3 25	8 05	6 Royal Oak	6 10	10 20
2 25	3 32	8 10	7 Beaver Lake	6 05	10 10
2 30	3 40	8 15	9 Elk Lake	6 00	10 00
2 37	3 55	8 22	11 Keating	5 54	9 47
2 43	4 10	8 28	13 Saanichton	5 47	9 35
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		11 30				

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VANCOUVER, B. C.

The British Columbia Mining Exchange

AND ENGINEERING NEWS

VOL. XV.

VANCOUVER, B.C., AUGUST, 1913.

No. 8

Visit of International Geologists

Excursion Parties of International Geological Congress Arrive in British Columbia—Representatives from Many Countries—Hospitable Reception—Importance of Occasion Realized by Public



International Geological Congress Excursionists and other Guests of Government of British Columbia. Group outside Alexander (Ladies) Club, Victoria, after complimentary luncheon.

In the July number of the B. C. Mining Exchange there was given information relative to the Twelfth International Geological Congress, including particulars of arrangements for holding the session of the Congress in Toronto, Ontario; the

object, and value of the Congress, and the character of the attendance at its periodical sessions. Some additional information follows, and, as well, an account of the visit to Western Canada of two Congress excursion parties:

A Favorable Comparison.

From a recently issued pamphlet it is learned that at the Eleventh Session, which was held in Sweden in 1910, there were 879 members, of whom 625 actually

attended the session. Thirty-six countries were represented, and there were 175 delegations, appointed by various governments, universities and societies throughout the world. It has not yet been made public how many delegates and members attended the Twelfth Session, but on July 24, the then known members of the session were as follows: Countries represented, 45; delegations appointed, 303; members enrolled, 902. A comparison of the figures shows that those for the Twelfth Session were appreciably higher than for the Eleventh.

The Meetings in Toronto.

The business meetings of the Congress held recently in Toronto were marked by excellent attendances and animated discussions. In addition, there was abundant hospitality shown the visitors, numbers of whom are distinguished scientists. The provision made for their entertainment was suitable to the notable occasion, and much appreciation was expressed of the generous hospitality so freely extended.

No attempt will be made here to even summarize the business that had the serious attention of the Congress, but reference may well be made to the chief subject before the main meeting, namely:

The Coal Resources of the World.

The preparation of the monograph, which fills three quarto volumes together, containing about 1,360 pages and is accompanied by an atlas of some seventy maps in colors, was entrusted to officials of the Geological Survey of Canada. Each country of the world was asked to contribute an article covering its coal resources, and with practically no exception each country selected its leading authorities, usually experts connected with the official Government Geological Surveys or Departments of Mines, to secure material for and write its chapter. In many cases new investigations in the field were necessary, unpublished material was drawn upon, and the old work revised and brought up to date. The result is a most complete and authoritative statement of the coal resources of the globe. Not only is the quantity of coal discussed, but also the amount of each kind, its mode and conditions of occurrence, including depth below ground, and this for practically each coal district in each country and each state. Even the Arctic and Antarctic regions are covered. Fifty-two countries have articles of length, fifteen are covered by short articles, nine report no resources of coal, twenty-five colonies are included in the reports of the motherlands. A chapter of about one hundred pages summarizes the individual reports and totals the resources of the world. The work is well illustrated with figures, maps, etc.

In its report of the opening meeting of the Congress, the Toronto Globe said: "That monumental contribution to the world's stock of knowledge, which will mark the Twelfth International Geological Congress, 'The Coal Resources of the World,' was laid under the lenses of the geologists, mineralogists and petrologists of the world yesterday, and was found practically without a flaw. The total coal reserves of the world, compiled from all the reports received, amount to 7,397,533 million tons, of which nearly 4,000,000

millions are bituminous coals, nearly 3,000,000 millions are brown coals of various grades, and nearly 500,000 millions are anthracite coals. Of the anthracite coals, Asia, with the great Chinese fields, has by far the largest supply of any of the great continental divisions, furnishing 407,637 million tons; in bituminous coal America, with 271,080 million tons, leads by a great margin, as it does also in the various grades of brown coals. The world's production of coal for the year 1910 was about 1,145 million tons, so that, though much must be allowed for loss in mining and for areas that for various reasons cannot be economically mined, there still remain many hundreds of years before exhaustion of the supply may be looked for. Taking up the individual countries, however, it is found that in more than one case the end is in sight."

The Congress Excursions.

Before the Congress opened its sessions at Toronto, there were carried out excursions to the Maritime Provinces, Quebec and Ontario. While the Congress was sitting trips were made to various places of interest within easy reach from Toronto.

Those Who Came West.

The party designated C-1. left Toronto at 7.30 p.m. on Thursday, August 14, and Winnipeg on the night of Monday following. After having spent a day each at Banff, Laggan, Field, and Glacier, and shorter stays at Sicamous and other places en route to the Coast, Vancouver was reached on Monday night, August 25th, and the trip to Victoria was made by night, arriving at the capital early Tuesday morning, 26th inst. This party was under the leadership of Dr. Frank D. Adams, president of the Congress, with Mr. J. B. Tyrrell as associate leader, Mr. J. McLeish, secretary, and Mr. Hugh S. De Schmid, assistant secretary. The members of the party were:

Adams, Mrs. F. D.

Adams, Dr. F. D., Dean of the Science Faculty, McGill University, Montreal, Quebec.

Ami, Dr. H. M., Ottawa, Ontario.

Andree, Dr. Karl, Privatdozent fur Geologie und Palaeontologie an der Universitat, Marburg, Hessen, Germany.

Arlt, Dr. Hans, Kgl. Bergassessor, Munchen, Germany.

Backlund, H. G., Geologue-petrographe de la Direction des Mines, Buenos Aires, Argentine.

Backstrom, Dr. H., Professeur de Petrographie a l'Universite de Stockholm, Djursholm, Sweden.

Barlow, Dr. A. E., Westmount, Montreal, Quebec.

Bascom, Miss F., Ph.D., U. S. Geological Survey, Bryn Mawr College, Pennsylvania, U. S. A.

Bigot, A., Doyen de la Faculte des Sciences de l'Universite de Caen, Caen, France.

Boden, Dr. Karl, Privatdozent fur Geologie an der Universitat Geologisches Institut, Alte Akademie, Munchen, Germany.

Cadell, H. M. Linlithgow, Scotland.

Carez, Madame B., Paris, France.

Carez, Leon, Docteur-es-Sciences, Paris, France.

Case, Dr. E. C., University of Michigan, Ann Arbor, Michigan, U. S. A.

Case, Mrs., Ann Arbor, Mich., U. S. A.

Cerulli-Irelli, Dr. Serafino, Maître de conférences de Paleontologie a l'Université de Rome, Italy.

Clapp, Dr. C. H., Geological Survey, Ottawa, Ontario.

Cole, L. H., Mines Branch, Canada Department of Mines, Ottawa, Ontario.

Coleman, Dr. A. P., Professor of Geology, University of Toronto, Toronto, Ontario.

Connor, M. F., Mines Branch, Ottawa, Ontario.

Daly, Dr. R. A., Harvard University, Cambridge, Massachusetts, U. S. A.

Deprat, J., Chef du Service Géologique de l'Indochine, Hanoi, Indo-Chine.

De Schmid, H. S., Mines Branch, Ottawa, Ontario.

Dinham, C. H., H. M. Geological Survey, Edinburgh, Scotland.

Dufault, S.

Ewald, Miss Marina, Bryn Mawr College, Pennsylvania, U. S. A.

Fermor, Dr. L. L., Geological Survey of India, Calcutta, India.

Fermor, Mrs., Calcutta, India.

Gentil, Louis Emile, Professeur a l'Université de Paris, Paris, France.

Goldman, Marcus J., Johns Hopkins University, Baltimore, Md., U. S. A.

Goodwin, Dr. W. J., Director, School of Mining, Kingston, Ontario.

Gregory, Miss.

von Grote, Dr. Friedrich, Munchen, Bayern, Germany.

Grutterink, Dr. Alide (Miss), Privat-Docte on Mikrochimie a l'Université de Leiden, Rotterdam, Netherlands.

Guinsberg, Albert S., Licencié es-science, Ingenieur-metallurgiste, Institute Polytechnique; Laboratoire de Mineralogie, St. Petersburg, Russia.

Haniel, Dr. C. A., Venusbergweg, Bonn, a Rh., Germany.

Harker, A., St. John's College, Cambridge, England.

Hatch, Miss Laura, Bryn Mawr, Pennsylvania, U. S. A.

Helne, Miss.

Hills, Dr. T. McD., Geological Department, Ohio State University, Columbus, Ohio, U. S. A.

Horne, Dr. John, F.R.S., Edinburgh, Scotland.

Hume, Dr. W. F., Geological Survey, Cairo, Egypt.

Jehu, T. J., The University, St. Andrew's, Scotland.

Johnston, W. A., Geological Survey, Ottawa, Ontario.

Keyes, Dr. Charles, Des Moines, Iowa, U. S. A.

La Mothe, General L. J. B. de General de Division, Inspecteur de Etudes technique de l'Artillerie, Place St. Thomas l'Agrin, Paris, France.

Lane, Dr. A. C., Tufts College, Boston, Mass., U. S. A.

Lane, Mrs. A. C.

Lantenois, H., Ingenieur en chef de la Circonscription des Mines de l'Indochine, Hanoi, Indo-Chine.

Lawson, Dr. Andrew C., University of California, Berkeley, Cal., U. S. A.

Loewinson-Lessing, Dr. Francois, Professeur de Geologie et de Mineralogie. Institut Polytechnique, Pierre le Grand, St. Petersburg, Russia.

Loewinson-Lessing, Vladimir Etudiant Institut Polytechnique Pierre le Grand, St. Petersburg, Russia.

Lory, Prof. P. C., Charge de Conferences de l'Universite, Grenoble, France.

Luck, Hugo Frank Paul, Leipzig, Germany.

Mailhot, A., Professor of Geology l'Ecole Polytechnique, Montreal, Que.

de Margerie Emmanuel, Ancien President de la Societe geologique de France, Paris, France.

Mattirolo, Ettore, Ingenieur en chef des Mines, Torino, Italy.

McConnell, R. G., Geological Survey, Ottawa, Ontario.

McLeish, John, Chief of the Division of Mineral Resources and Statistics, Mines Branch, Department of Mines, Ottawa, Ontario.

Mercial, Dr. Giuseppe, Professor, Istituto Geologico della Regia Universita, Pisa, Italy.

Michalon, Lucien, Ingenieur des Mines, Paris, France.

Milch, Dr. Ludwig, Professor de Mineralogie und Petrographie Griefwald, Preussen, Germany.

Mitscherlich, Heinz Erich, Dipl. Bergingenieur, Karlsruhe, Baden, Germany.

Molengraaff, Dr. Gustav Adolf, Delft, Netherlands.

Moore, Elwood S., Dr., Professor of Geology and Mineralogy School of Mines, State College, Pennsylvania, U. S. A.

Miller, A. M., State University, Lexington, Kentucky, U. S. A.

Nicholas, Tressilian Charles, Trinity College, Cambridge, England.

Paulcke, Professor Dr. Wilhelm, Karlsruhe, Baden, Germany.

Perkins, Dr. C. H. Burlington, Vermont, U. S. A.

Quesnel, Dr. Percy Dudgeon, Lecturer in petrography, University of Uppsala, Sweden.

Quesnel, Mrs. P. D.

Peyerimhoff, Henride, Maitre des Requetes honoraires au conseil d'Etat Secretaire du Comite Central des Houilliers de France, Paris, France.

Raisin, Miss C. A. Dr., Bedford College, London, W. England.

Rathgen, Miss Ann Maria Elizabeth, Bonn a. Rhein, Germany.

Rice, Dr. W. H., Professor of Geology, Wesleyan University, Middletown, Connecticut, U. S. A.

Reidel, Adolph Johannes, Braunschweig, Germany.

Romer, Euhenius, Docteur-es-sciences, Professeur a l'Universite de Lemberg, Austria.

Saugrain, Dr. G., Geologie Publiciste, Paris, France.

Schenck, Professor Dr. Adolf, Halle a. S. Germany.

Skottsberg, Dr. Carl Johan Frederik, Maitre de conferences a l'Universite, Uppsala, Sweden.

Skoufos, Theodore, Universite d'Athenes, Athenes, Greece.

Steinman, Professor Dr. Gustav, Geheimer Bergrat, Bonn a. Rhein, Germany.

Stepanov, Paul, Geologue du Comite Geologique et Ingenieur des Mines, St. Petersburg, Russia.

Stille, Dr. H. W., Professor an der Universitat Leipzig, Direktor der Koniglich Sachsischen Geologischen Landesanstalt, Leipzig, Germany.

Stolley, Professor Dr. E., Technische Hochschule, Braunschweig, Germany.

Stratanowitz, Eugene, Geologist of the Rogoslawsk Mining Estate, Turjinsk, Rudniki, Russia.

Sutton, William John, Victoria, British Columbia.

Szadeckzy, Dr. Jules, Kolozsvár, Hungary.

Termier, P. M., Directeur du Service de la Carte Geologique de la France, Paris, France.

Termier, Mlle.

Tietze, Dr. Emile, Directeur de l'Institut Geologique Imperial Royal d'Autriche, Vienne, Austria.

Tilman, Dr. N., Bonn a. Rhein, Germany.

Tscherneyschew, Th. Directeur du Comite Geologique de Russia, St. Petersburg, Russia.

Tyrrel, J. B., Toronto, Ontario.

Valiquette, J. H., Bureau of Mines, Quebec.

Walcott, Dr. C. D., Smithsonian Institution, Washington, D. C., U. S. A.

Wallace, Dr. Robert C., Professor of Geology and Mineralogy, University of Manitoba, Winnipeg, Manitoba.

Welter, Dr. Otto A., Bonn a. Rhein, Germany.

Wherry, Dr. Edgar T., Assistant Professor, Lehigh University, South Bethlehem, Pennsylvania, U. S. A.

White, Jas., Secretary Commission of Conservation, Ottawa, Ontario.

Wigglesworth, E., Geological Museum, Cambridge, Mass., U. S. A.

Wilson, Dr. M. E., Geological Survey, Ottawa, Ontario.

Wordie, J. M., St. John's College, Cambridge, England.

Zoude, Paul L. C., Ingenieur civil des Mines, 109 Boulevard de Grande Ceinture, Bruxelles, Belgium.

The full number of the party was 115 members, but a few did not continue with the party right through to Victoria. The number of countries represented was 16, as under:

	Members
Austria	3
Argentina	1
Belgium	2
Canada	24
France	10
Germany	17
Great Britain	9
Greece	1
Hungary	1
India	2
Indo-China	2
Italy	3
Netherlands	1
Russia	8
Sweden	4
United States of America.....	27

Party C-2.

Party C-2 also left Toronto on the evening of Monday, August 14, but half an hour later than C-1, but as no visit was made to any place on the way, Winnipeg was reached on Saturday just before noon and the journey westward resumed the same night. Sunday evening was spent at Medicine Hat, and then the C. P. R. main line was left, this party coming to British Columbia via the Crowsnest railway. Monday, 18th, was spent in the coal mining district of the Rocky Mountain foothills east of the divide, Tuesday in the British Columbia Crowsnest district, and Nelson was the stopping place on Wednesday night. Thursday was spent in the Boundary district, Friday at Rossland and Trail, Saturday Revelstoke was passed through and that night Kamloops was reached. Just after midnight of Sunday the travellers were in Vancouver, and they remained there until Monday morning at ten o'clock, when the morning steamer was taken for Victoria, the latter city having been reached at 2.30 o'clock in the afternoon.

Mr. R. W. Brock was leader of C-2, and Mr. Jas. McEvoy associate leader, with Mr. H. E. T. Haultain as secretary and Mr. H. Frechette as his assistant. The members of this party were as under:

Anderson, E. M., Geological Survey, Edinburgh, Scotland.

Ashworth, John, M.E., Manchester, England.

Baker, Sir Augustine, Dublin, Ireland.

Boeke, H. E., Dr., Professeur Mineralogisches Institut, Halle a.S., Germany.

Boggild, Dr. O. B., Professeur Mineralogical Museum, Copenhagen, Denmark.

Borgstrom, Dr. L. H., Universite Helsingfors, Finland, Russia.

Brooks, A. H., Geological Survey, Washington, D. C., U. S. A.

Brock, R. W., Director Geological Survey, Ottawa, Ontario.

Camsell, C., Geological Survey, Ottawa, Ontario.

Charbonnier, J., Manager, West Canadian Collieries Ltd., Blairmore, Alberta.

Dahlblom, Lorent Edward Theodor, Bergmastare in Gefle-Dala District, Falun, Sweden.

Dick, William J., Commission of Conservation, Ottawa, Ontario.

Dowling, D. B., Geological Survey, Ottawa, Ontario.

Drysdale, Dr. C. W., Geological Survey, Ottawa, Ontario.

Dupaigne, Reverend Pierre, Licence-essciences, Professeur des Sciences Physique et naturelles au Seminaire de Philosophie, Montreal, Quebec.

Dunn, George, Loudon, Annanhill, Kilmarnock, Scotland.

Fernow, Dr. B. E., Dean of Faculty of Forestry, University of Toronto, Toronto, Ontario.

Fernow, Mrs.

Finnie, O. S., Department of the Interior, Ottawa, Ontario.

Frechette, H., Mines Branch, Department of Mines, Ottawa, Ontario.

Haultain, H. E. T., Prof. of Mining Engineering, University of Toronto, Toronto, Ontario.

- Haultain, Mrs.
 Gardner, Samuel McLare, Mount Vernon Colliery Co., Ltd., Glasgow, Scotland.
 Gurich, Prof. Dr. B., Hamburg, Germany.
 Hobson, Bernard, F.G.S., Sheffield, England.
 Hopkins, Dr. Thos. Cramer, Maitre de Conferences a l'Universite, Uppsala, Sweden.
 Hore, R. E., Michigan College of Mines, Houghton, Michigan, U. S. A.
 van Horne, Dr. F. R., Case School of Applied Science, Cleveland, Ohio, U. S. A.
 Howley, Dr. J. P., Director, Geological Survey of Newfoundland, St. John's, Newfoundland.
 Hubrecht, Dr. P. F., Batavia, Netherlands-India.
 Hurl, Mark, Glasgow, Scotland.
 Hurl, John McGlashan Redholm, M.E., Glasgow, Scotland.
 Inouye, M., Director Geological Survey of Japan, Tokyo, Japan.
 Ives, Henry Goodson, Andover, New Hampshire, U. S. A.
 Ives, J. T. B., F. G. S., Andover, New Hampshire, U. S. A.
 Jarvis, Gerald, Arnprior, Ontario.
 Kido, Chutaro, Superintendent of the Geological Institute of the South Manchuria Railway Company, Dairen, Kantoshu, Manchuria.
 Kennedy, G., Toronto, Ontario.
 Kukuk, Paul, Bergassessor a. D., Bochum i.W. Germany.
 Lebling, C.
 LeRoy, O. E., Geological Survey, Ottawa, Ontario.
 Luttman-Johnson, H. M., F.R.G.S., Petworth, Sussex, England.
 Maier, E., Professeur titulaire en geologie Universite de Santiago, Santiago, Chili.
 Martius, Dr. Siegfried G., Assistant am mineralogischpetgraphischen Institut der Universitat Bonn, Bonn a Rh., Germany.
 McMillan, J. G., 225 Geoffrey St., Toronto, Ontario.
 McEvoy, J., Mining Engineer and Geologist, Toronto, Ontario.
 McEvoy, Mrs.
 McIntosh, Donald Sutherland, Prof. of Geology, Dalhousie University, Halifax, Nova Scotia.
 Mellor, Dr. Edward Thomas, Geological Survey, South Africa.
 Miller, Benjamin Leroy, Professor of Geology, Lehigh University, South Bethlehem, Penn., U. S. A.
 Morel, Jean, Ingenieur civil des Mines, Boltsfort pres Bruxelles, Belgium.
 Peck, Frederick B., Lafayette College, Easton, Penn., U. S. A.
 Peck, Mrs.
 Powers, Sidney, Inst. of Technology, Boston, U. S. A.
 Schofield, S. J., Geological Survey, Ottawa, Ontario.
 Singewald, J. T., Jr., Associate in Economic Geology, Johns Hopkins University, Baltimore, Md., U. S. A.
 Spruyt, C., Anvers, Belgium.
 Stirling, J. T., Chief Inspector of Mines for Alberta, Edmonton, Alberta.
 Surzycki, T., Petrokow, Pologne-russe, Russia.
 Thwaites, F. T., Madison, Wisconsin, U. S. A.
 Wallis, H. B., London, England.
 Wilbraham, A. G. B., London, England.
 Wilson, Dr. A. W. G., Mines Branch, Department of Mines, Ottawa, Ontario.
 Wolff, Prof. Dr. Th. F. Wilhelm, Kgl., Landesgeologe, Frohnau b Berlin, Germany.
 Weigand, Dr. B., Deutsche Geolog. Gesellschaft, Elsass, Germany.
 Wilson, Dr. M. E., Geologist, Geological Survey, Ottawa, Ontario.
 Wright, C. W., Ingurtosu, Sardinia, Italy.
 Wright, Mrs.
 Zuber, Dr. R., Professor of Geology, University of Lemberg, Austria.

The published list of names of those comprising the C-2 party showed that there were 90 members representing 21 countries, as under:

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 S. S. "CHEAKAMUS," S. S. "CASSIAR," S. S. "COMOX," S. S. "CAPILANO,"
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A GLANCE

at the Contents of this issue should convince the man who handle Mining Materials and Machinery that there is no better medium for reaching the mining men than the advertising columns of this Journal

	Members
Austria	1
Belgium	2
Canada	38
Chili	1
Denmark	1
Egypt	1
Finland	1
France	1
Germany	6
Great Britain	11
India	1
Ireland	1
Italy	2
Japan	1
Manchuria	1
Netherlands	1
Newfoundland	1
Russia	1
South Africa	1
Sweden	1
United States	16

However, various causes led to the number being reduced before Victoria being reached, so that only about 70 visited that city. In addition there were Hon. Louis Coderre, Dominion Minister of Mines; Madame Coderre and two sons, Miss Coderre, Madame Callardeau, and the minister's secretary.

Small Party Visited Nanaimo.

Some of the members of C-2 party wishing to visit one of the Vancouver Island coal mining districts, they crossed to Nanaimo on Monday morning, 25th, with Mr. William J. Dick, mining engineer to the Canada Conservation Commission, as guide. The other members of this small party were: Mr. A. H. Brooks, Mr. J. Charbonnier, Dr. B. Gurich, Herr Paul Kukuk, Prof. E. Maier, and Dr. R. Zuzer. The Geological features of especial interest in the vicinity of Nanaimo were shown to the visitors, but owing to the coal mines being closed as a result of a strike of the miners, it was not practicable for underground examination of any of the coal faces to be made. On Tuesday morning train was taken to Victoria, where the main body of the excursionists was rejoined.

Proceedings at Victoria.

The following will give an outline of the proceedings of the visitors when at Victoria:

The C-2 party arrived at half-past two o'clock on Monday, 25th, having crossed from Vancouver by the C. P. R. steamer "Princess Charlotte." At the dock tally-hos were in waiting and on these the visitors were taken for a drive around the city and suburbs. The Empress hotel was reached at 6 o'clock, on return from the drive, and dinner was served at 7 o'clock. The evening was spent at the hotel in an informal and sociable manner, many residents of the city assembling to meet the distinguished visitors. On Tuesday morning the C-2 party was taken in motor cars to a number of places in and about Victoria and were shown various features of particular interest to geologists. By noon this party was back at the hotel. Meanwhile the C-1 party, which had come over from Vancouver by the Monday night steamer, had been taken in tally-hos for a three hours' drive, and they, too, reached the Empress hotel at noon. Shortly after one o'clock all sat

down to a luncheon served in the ballroom of the Alexandra Club, as the guests of the Provincial Government of British Columbia.

For an hour or two after luncheon the visitors were left free to spend the time as best pleased them, and then all proceeded to Government House grounds, where His Honor the Lieutenant-Governor (Hon. T. W. Paterson) and Mrs. Paterson entertained them, together with many local ladies and gentlemen, at a Garden Party. In the evening both parties, together with a number of residents of Victoria who were assisting in making things pleasant for the visitors, dined in the ballroom of the Empress hotel, where several hours were afterward spent. Before midnight the C-2 party went on board a C. P. R. steamer, by which during the night they returned to Vancouver.

On Wednesday morning the members of C-1 party were taken to see the same geological features that had been shown



Rawhiding Ore from Nugget Gold Mine.

the other party on Tuesday morning. They had, however, the benefit of a specially pleasant addition to the programme in the shape of luncheon served in the open air on the property of Mr. F. F. Higgs, at Albert Head, which was generally voted to have been one of the most enjoyable of the many forms of entertainment provided during the course of the excursion. Victoria was reached on return by three o'clock, and at half-past four adieu was said to the Capital, it having been arranged for an early departure to be made, so as to admit of this party having the benefit of a daylight trip from Victoria to Vancouver, the trip to Victoria having been made at night.

GREAT GATHERING OF SCIENTIFIC MEN.

Under this heading, the Victoria Daily Colonist printed the following

account of the proceedings at the luncheon on Tuesday:

What was undoubtedly the most distinguished and cosmopolitan gathering of scientific men that ever assembled in the City of Victoria was seen in the Alexandra Club yesterday afternoon, when, under the aegis of the Provincial Government, the two parties of the Geological Congress joined with the local men in making a splendid aggregation.

The great hall of the club was practically filled with the men of all nations, there being about 200, in all, present. Acting-Premier Bowser occupied the chair, and with him were seated Professor Adams, the president of the Congress, and Hon. Louis Coderre, Federal Minister of Mines. Ranged along the leading table were a number of distinguished scientists from all over the world, and throughout the hall names were frequently called that have often been heard of in the great work of scientific research.

His Honor Lieutenant-Governor Paterson was a prominent representative of Province affairs, as were also the Hon. Dr. Young, Minister of Education; Hon. W. R. Ross, Minister of Lands; Hon. T. Taylor, Minister of Public Works; Hon. Price Ellison, Minister of Finance and Agriculture; Hon. D. M. Eberts, Speaker of the House; Chief Justice Macdonald, Mr. H. B. Thompson, M.P.P., and others. There were also present Lord Provost Stevenson, of Glasgow; Senator Macdonald, Mayor Morley, Col. Roy, Mr. A. E. Smith, United States Consul, and Mr. Carl Loewenberg, German Imperial Consul.

The function was rendered memorable as well as enjoyable by a series of brief speeches from the several leaders of the Congress, and in this connection it should be said that to many of them the chief charm lay in the fact that the foreign delegates spoke to the audience in their native tongue. While the speaking was in progress the ladies entered the gallery, and were participants in the latter part of the programme. Excellent music was provided throughout the luncheon festivities; as the representative of each nation rose to deliver his thanks, the orchestra struck up the national air of the country he represented. In this sense the function was an object lesson in national anthems and imperial hymns, which appeared to be greatly enjoyed.

Hon. Mr. Bowser's Address.

Acting-Premier Bowser, in formally welcoming the visitors to the City of Victoria, said that the gathering in which he stood was perhaps the most distinguished of the kind that had ever been in the Capital, or, for that matter, in the Province. "We have assembled here today," he said, "an aggregation of scientists such as is seldom seen anywhere in the world. It represents practically every civilized country in the world, and I do not think that I can put it better than one of the local newspapers did in describing the visit the other day when it referred to the members of the Geological Congress as being the elite of the world.

"In this western part of Canada we are glad indeed to extend the hand of

welcome to such a gathering. Many of you may have seen parts of this Province before, but I am sure that for many of you this is the first opportunity you have had, and to all of you I would like to say on behalf of the people of the Province that no warmer welcome could be extended to you anywhere than the one we harbor in our hearts, however we may fall short in the matter of expression. And I would go a step further in this connection and suggest to all of you that when you leave this city tonight or tomorrow, as the case may be, it will not be good-bye, but simply au revoir.

"We feel that in British Columbia we have a great deal to offer the geologist. Nature has been very prodigal in the distribution of favors to her. We ourselves are but on the fringe of discovering what our own possessions are, and it will not be at all surprising if your visit should reveal to us many things which we have never dreamt of before in the way of minerals and other products. Just to give you an illustration of how far we are from knowing with any degree of accuracy what we have in this Province, I may tell you that some little time ago one of our officials of the fishery department came back from a trip of inspection with the report that he had discovered another great lake, some four miles long and one mile broad, that had not yet been charted at all."

He then proposed the toast of the visitors, which was received with acclamation.

Welcome Acknowledged.

Professor Frank D. Adams, president of the Congress, was the first to respond to the toast. He expressed his very great pleasure at the splendid reception that had been accorded the members of the Congress in the city of Victoria, and in doing that he made special reference to the Provincial Mineralogist, Mr. Wm. Fleet Robertson, who had gone all the way to Ottawa in order to assist in making arrangements for the western excursion parties. In speaking of the Congress, he said that they had twenty-seven different nations represented, which he thought was a record for any kind of a Congress.

"In coming across Canada," he proceeded, "many of the visitors from abroad have had an opportunity of seeing the geological features of the country. Before convening at all a number of them went through the Maritime Provinces, and now, after the Congress, we are touring the whole Dominion. Our time is necessarily short, but at the same time we have been able to see something of the wonderful possibilities for development that are latent in this country. If I might speak with particular reference to the West, I should say that in British Columbia we have had an excellent opportunity of studying conditions. Many of our own men have profited immensely by the advice of the foreign experts, and I feel sure that even in the practical expression of geology benefits will be large and rapid. We have shown our foreign delegates that we are not merely 'Our Lady of the Snows,' but that we have something more than snow and ice. In fact, I think we have established the

truth beyond doubt that we have, in immense proportion, other resources, if I might say so, belonging to the more torrid seasons of the year. When we go from here we will take with us the best possible of recollections of how they do things in the city of Victoria."

From Other Countries.

Dr. E. T. Mellor, of the Geological Survey, South Africa, was the next speaker. Speaking with reference to geology, he said he was greatly pleased to observe that Canadians were enthusiastic about the work and were ready to spend large sums of money upon it. He pointed out that while in many cases the experiments carried on might result in nothing of any practical value being discovered, at the same time he assured them that none of it was wasted and that even the most seemingly fruitless of it would bear fruit in the long run.

"Compared with European countries," he proceeded, "Canada must be regarded as a young country, but she must not forget that there are other countries smaller still, which were looking to Canada for an example. South Africa is looking to you today, and I feel sure that South Africa will be strengthened and encouraged in her course by what we have seen in Canada during this present visit."

Dr. A. C. Lawson, of the University of California, in responding to the toast for the United States, said that he could personally testify to the development of Canada. "A quarter of a century ago I was a resident of British Columbia," he said; "I lived and worked here, and now that I have come back I begin to feel that I have come home. At all events my coming back in this way enables me to testify in a very decided manner to the marvelous development that has taken place in the interval."

"The people to the south of you, of whom I am now one, have gone through the same phase of progress that you are now but entering upon. You have not gone very far, but we are watching you with the keenest of interest. You are deeply interested in the development of your natural resources. You are interested in getting out of the ground that which is in it, and as it is perfectly true that all the material welfare of the world is intimately and absolutely wrapped up in the ground, it is in the very nature of progress that you should be interested in getting out the wonderful substances. That is the work of geology, and that is why you must cultivate the geologist. Perhaps, sometimes, there is a feeling that the discovery of these things is of passing interest and value only, and is sought for by individuals, but that is not the case. There is a deeper wisdom in the hearts of the people which demands a knowledge of what the earth contains."

"I feel that I must say that the success of the Congress is due in a large measure to the labors of the director and officers of the Canadian Geological Survey. Every one of the visiting delegates is deeply indebted to them, and I am sure that none of them more so than those of us who hail from the United States."

M. Louis Emile Gentil, Professor at l'Universite de Paris, France; Professor

Tscherneyschew, Th. Directeur du Comite Geologique de Russia, St. Petersburg, Russia; and Professor Gurich, of Hamburg, Germany, also spoke briefly, in their respective languages.

The proceedings closed with the singing of the National Anthem.

Afterward the party assembled on the steps of the club and had their photographs taken en bloc.

Ladies Entertained.

The luncheon given the ladies connected with the Geological Congress yesterday at the Alexandra Club was one of the pleasantest social features of their visit. Mrs. W. J. Bowser, wife of the Attorney-General and Acting-Premier, performed the duties of hostess with characteristic grace. At Mrs. Bowser's right sat Mrs. Paterson, wife of His Honor the Lieutenant-Governor. The visitors present were:

Mrs. Adams, wife of the president of the Congress, who sat at Mrs. Bower's left; Mrs. L. Carey, Mrs. E. C. Case, Mrs. Coderre, wife of the Minister of Mines, Ottawa; Miss Coderre, Mrs. C. W. Drysdale, Miss M. Ewald, Mrs. Calardeau, Mrs. L. L. Fermor, India; Mrs. B. E. Fernow, Mrs. O. S. Finnie, Miss E. Gregory, Dr. Anna Grutterink, Miss L. Hatch, Mrs. H. E. T. Haultain, Miss A. Heine, Mrs. A. C. Lane, Mrs. F. B. Peck, Mrs. P. D. Quesnel, Dr. C. A. Raisin, Mrs. A. M. E. Rathgen, Miss M. M. Fermier, and Mrs. C. W. Wright.

Those invited to meet the distinguished travelers included Mrs. D. M. Eberts, Mrs. J. A. Macdonald, Mrs. Henry Croft, Mrs. E. G. Prior, Madame Roy, Mrs. J. J. Shallcross, Mrs. Fleet Robertson, Mrs. R. P. Butchart, Mrs. McGregor Young, Madame Bergeron, Mrs. E. O. Scholefield and Miss Dawson, all of whom were members of the reception committee.

Reports of the proceedings of the different excursions of the members after leaving Victoria will appear in our September issue.

Provincial Mining News

(Compiled for the B. C. Mining Exchange by E. Jacobs).

Cariboo.

Announcement has been received of the intention of the Provincial Labor Commission to hold sittings in Cariboo district during September. The dates are: Tete Jaune Cache, 9th; Fort George, 12th; and between 13th and 25th, Barkerville, Quesnel, 150-Mile House, Clinton, Lillooet, and Ashcroft.

Mr. A. Stewart, resident engineer at Quesnel for the Public Works Department, has arranged to make a tour of inspection of the route of the proposed wagon road between Barkerville and Fraser river—from Bear lake through to Fraser river via Goat river.

Drilling, to test the gold-bearing gravel, has been commenced at the Meadows, below the old Kurtz & Lane shaft, on Williams creek, Cariboo, by a New York syndicate, the object being to ascertain

the suitability or otherwise of the ground for gold-dredging. A Keystone drill, steam-driven, is now being used in making the tests.

Yale.

The size of the orebody lately opened in the Aufeas mine, Hope, on Wardle Creek, has not yet been determined. So far a width of 26 ft. of ore has been proved, but no wall has yet been found. The ore is arsenopyrite with a little chalcopyrite, and gold is the principal value metal it contains.

The old Murphy property, situated on the north side of Fraser river about one mile above Hope railway station, says the West Yale Review, has been bonded by A. Beamer and A. E. Raab, of Hope. The original mineral claim was located and development was done on it in the early sixties; later several other claims were located, and now the whole group is under bond. An 800-ft. adit, driven long ago, has been cleaned out and is being extended to connect with an old shaft. The ore is gold copper of good grade.

AINSWORTH AND SLOCAN.

Ainsworth.

The following information concerning the Silver Hoard mine, in Ainsworth camp, has been given to the Kaslo Kootenai by Mr. W. S. Hawley, managing director of the company owning and operating that mine: "As a result of having found a larger and better orebody at the 100-ft. level than we had at the 50-ft., and the encouraging outlook generally, the company has decided to sink a double compartment shaft on the Silver Hoard to a depth of 500-ft., which will be 400 ft. deeper than the lowest present level on the property. With this end in view surveys are being made and preliminary work is to be commenced at once. A compressor, to be driven by water from the north fork of Cedar creek, is to be installed, and this will supply all the power that will be required for drilling and hoisting. This compressor, by the way, will be of a somewhat new design and principle; it was designed by Prof. Francis A. Thomson, head of the min-

ing the ore. This season's work on the property has developed nothing new. A crosscut was started to open up a ledge running parallel with the one upon which some development work has already been done, but work had to be abandoned before the ledge was cut on account of the supply of powder having run short. It cost \$30 to get the thirty sacks of ore from Hall creek to Howser, the nearest railway station, and it travelled by pack train, launch and wagon in making the trip.

"According to reports brought down from the Upper Duncan section, a new strike has been made on the Wagner group by Cutler T. Porter, who has been conducting prospecting operations this summer by means of sluicing. No particulars are obtainable at the present time regarding the nature of the new find but it is believed to be a big one. Mr. Porter having gone down to Spokane to round up some of the mining men down there to come up and take a look at it.

"A party of investors went into the Upper Duncan section recently with the



Wet Water Lake, Near Summit of Mountain above Sheep Creek, Nelson Mining Division.

EAST KOOTENAY.

Fernie.

On August 17 a train consisting of 101 cars of coal and hauled by one locomotive (a Mallet compound) left the Great Northern Railway Co's yards at Fernie.

Saturday, August 16, was pay day for the miners, says the District Ledger of Fernie, and as the work had been pretty steady it was a record pay sheet.

On August 19 members of the International Geological Congress Excursion C-2 were entertained at a smoker at Fernie. In the course of a short address made by Mr. W. R. Wilson, general manager for the Crow's Nest Pass Coal Co., by request of the visitors, that gentleman said that in no mining region where he had been was the science of geology more necessary to the successful prosecution of coal mining than right there in the Crow's Nest Pass, where conditions of the most extraordinary character made the mining of coal from the earth a business on which must be brought to bear every aid that science, skill and experience could afford.

ing engineering department of the State College of Washington, Pullman, Wash.

Howser, Duncan River.

One of a number of known promising mining districts in the province, extensive development of which has not been practicable owing to absence of transportation facilities, is that in the vicinity of Duncan River, above Howser lake. The Kaslo Kootenai has time and again drawn attention to the needs of this district, but thus far with not much success in the direction of overcoming the obstacles to progress. However, it continues to publish news of the Upper Duncan; recently it printed the following:

"A test shipment of ore, amounting to about 30 sacks, was brought down from the Red Elephant mine, on Hall creek, on Monday, the shipment being made by J. W. Power and Hughie McKay, the owners of the property. This shipment will be cut up into three lots, one to go to the State College of Mines, Pullman, Wash., for testing, and the other two to separate smelters, also for testing, the idea being to discover the best method of treat-

intention of going up Westfall creek to examine the Old Gold property. They were unable to get very far above Healey's landing, however, on account of the condition of the trail up the river above that point and were obliged to return without reaching their intended destination."

Marblehead.

A press despatch from Kaslo, published in Spokane, is as follows:

There has been upwards of \$500,000 spent in the development of the property of the Canadian Marble Works at Marblehead up to this time, and the company feels assured of the ultimate success of the venture. Ten men are employed.

Last week four huge blocks of marble were taken out. These were almost perfect, the largest measuring over 100 cubic feet. This product in the rough is worth \$2 a cubic foot and when sawn for ornamental building purposes sells for \$10 a cubic foot. The tunnel where the quarrying is being done is about 30 ft. wide, 20 ft. high, and has been driven straight in for 60 ft.

A drill hole driven down almost perpendicularly for 140 ft. shows the marble deposit to be good to that depth. Winnipeg capitalists own the property.

Kaslo.

The Lardo correspondent of the "Kootenai" says: "The mining outlook along the Lardo branch is steadily improving and prospects have not been so encouraging for a long time. Prospectors and claim owners are active and the indications are that capital will soon be more readily available with which to develop the many promising locations."

Grading on the Kaslo and Slocan railway line, which is being changed from narrow to standard gauge, is likely to be completed by November 1, according to the contractor for the work. Most attention has been given during the summer to completion of the work from Whitewater, a few miles down toward Kaslo, for the altitude of that part being higher snow falls earlier than nearer Kaslo. It is hoped steel will be laid part of the way between Whitewater and South Fork before the snow shall commence to fall, for it will then be practicable to go in and out between Three Forks and South Fork pending completion of the line through to Kaslo. In order to make way for the new standard gauge track and siding the ore house of the Utica mine at 12-Mile has had to be moved back a distance of several feet.

L. A. Lemon recently brought to Kaslo some samples of ore he had taken from his Black Prince property, which is situated a few miles up the line and close to the Kaslo & Slocan railway track. The ore is fine looking galena and assays about 75 oz. to the ton in silver and 70 per cent. lead. Mr. Lemon states that he has uncovered an 18-in. showing near the surface.

Zincton, Slocan.

Shortly after the death last month of the late Mr. Thomas G. Proctor, managing director for the Lucky Jim Zinc Mines, Ltd., work was suspended at the company's mine, Zincton, Bear lake, and it has not since been resumed. In this connection the following, from the Kaslo Kootenai, will be of interest:

A. W. Allen, acting managing-director of the Lucky Jim Zinc Mines, Limited, accompanied by Superintendent Norrie and T. G. Montgomery, of St. Paul, the latter a director and shareholder in the mining company, came to Kaslo from the mine on August 30. Mr. Allen is hopeful of an early resumption of operations at the Lucky Jim, which property has been closed down for some weeks pending the arrival of a decision regarding the lead and zinc tariff in the United States Senate. "Just now the outlook is very hopeful for an early settlement of the question," said Mr. Allen, "and is encouraging from our standpoint, because it appears reasonable for us to expect a substantial and beneficial reduction in the tariff which will result in a profit to us of several dollars more per ton than we were formerly able to get. The indications are that the new tariff will impose a duty of about three-quarters of a cent per pound and a ten per cent. ad valorem duty on

the zinc content of the ore. How the duty will be levied remains to be seen, but in any case the outlook is encouraging from the standpoint of zinc producers here." Since the death of T. G. Proctor, who succeeded G. Weaver Loper as managing director of the Lucky Jim, Mr. Allen has filled that post temporarily.

Sandon.

Several Slocan mines that had not shipped ore for a number of years lately commenced to send ore to Sandon for shipment by railway and steamer to the smelting works at Trail. The Last Chance aerial tramway having been put in running order, after a long period of non-use, is being utilized for conveyance of ore from the Surprise mine down to the lower terminal below Cody, whence hauling is done by teams. The outlet for the Surprise is now through one of the old Last Chance adits, connection having been made by a long extension of the adit and then a raise of more than 800 ft. Ore is also being received at the Sandon railway depot from the Wonderful mine, at which years ago much galena was recovered by ground sluicing. Underground work has resulted in the vein on the Wonderful being found and now ore is being mined from it.

The Daily News, Nelson, recently published the following among its news items from Sandon: It is expected the Noble Five will shortly drive another tunnel. Mr. Little, mining expert for Hon. James Dunsmuir, the owner of the property, has been at the mine looking into the matter. The Last Chance aerial tramway is now running in good shape, and coal and other supplies are being taken up for the Surprise mine. George Gourmley and Hank Wright are shipping 200 sacks of ore from the Evening, which they have under lease. A. Copeland came in recently and went up to the Colonial, from which he shipped two cars of ore last winter. W. M. Bennett lately returned from Spokane and went up to the Mountain Con; a good showing of high grade ore has been struck in the raise, and a small lot of ore has been packed down for shipment; the owners are now packing up cordwood and supplies for next winter's work. The Dunedin is shipping about 15 tons of ore this week. Good progress is being made in driving the long tunnel at the Payne, although only two shifts are being worked in it. H. Sharp, of Republic, has been examining the McAllister property, up the north fork of Carpenter creek, to make a report on it. There are good showings of ore in several places, and it is expected considerable work will be done before long.

New Denver.

From the Slocan Record it is learned that in the shaft of the Apex, near New Denver, at a depth of 53 ft., a vein 18 in. in width was uncovered. The vein is quartz, carrying gray copper and ruby silver, dry ore. The assay value has not yet been obtained, but the ore will probably run very high in silver.

Silverton.

The Van-Roi mine report for the month of July shows that little ore was concentrated in that month, milling operations

having been temporarily suspended on July 9. Only 143 tons of ore was milled; its average assay was 3.7 oz. silver per ton, 0.1 per cent. lead and 3.5 per cent. zinc. The metals recovered were half a ton of lead concentrate and two tons of zinc concentrate; the former contained 117 oz. silver per ton, 54.6 per cent. lead, and 10.3 per cent. zinc; the latter contained 35.3 oz. silver per ton, 3.4 per cent. lead, and 38.2 per cent. zinc. The west drifts on levels Nos. 7 and 9 were extended, and the raise from level No. 9 was advanced 22 ft. Diamond drilling was continued from No. 9 level and holes from both 1250 and 1510 ft. from the portal reached the vein.

Shipments of silver-lead ore and concentrate to Trail by the Standard Silver-Lead Mining Co. during August totalled about 1100 tons. This included some 200 tons of crude ore and 900 tons of concentrate. The zinc concentrate made at the company's mill at Silverton has been stored latterly; of this product from 500 to 600 tons is made monthly, with the mill running only one shift. This is in addition to the silver-lead concentrate, which is shipped regularly, as fast as transportation arrangements conveniently admit. The output of ore from the Standard mine is chiefly from stopes between levels Nos. 6 and 5 and Nos. 2 and 4. The orebody being mined in the latter gives from 7 to 8 ft. of clean ore, beside much mill feed ore. The lower stopes, between 6 and 5, also yield considerable ore. No. 7 adit, being driven at a vertical depth of about 300 ft. below No. 6, is now in more than 1400 ft. with 400 ft. more to be driven before the face will be under the portal of No. 6. One shoot of ore has been cut by No. 7—lead ore with some zinc—but this working will have to be advanced to about 3800 ft. from the portal before it will be vertically under the orebody being mined between 6 and 5. Preparations are being made to extend No. 8, which is 750 ft. vertically below No. 6; the old adit is being retimbered before resuming driving.

NELSON.

Salmo.

Correspondence from Salmo, in Nelson mining division, published in the Nelson Daily News at the end of August, was as follows:

D. B. Myers, a mining engineer of Los Angeles, California, has just completed a geological survey and examination of the Emerald mine for the owners, Iron Mountain Limited.

Sid Ross and Harry Bennett have taken out a six weeks' supply of grub to their claims on the South Fork of the Salmon river. They have some good looking ore and expect to do a considerable amount of development work. The section of country where they have gone is one of promise and one in which but little work has as yet been done. The government is spending quite an amount of money on roads and trails down that way this summer, and all old-timers promise that the money will not be spent in vain.

At present there are four mines in operation in this district. The Motherlode,

the Queen and the Emerald have about as many men as usual, while the H. B. employs only a few for the present. Salmo people would like to see the Consolidated Mining and Smelting Co. doing work in the camp once more. Whether or not it will recommence operations on the Silver Dollar is hard to say at present.

The Daily News also says: Opened for a length of 800 ft., with the oreshoot running continuously for that distance one of the ledges on the Golden Fawn group at Sheep Creek is without equal in that camp, according to Charles E. Bennett, one of the owners of the property, who came to Nelson after two months spent at the mine. Mr. Bennett stated that five ledges had been discovered on the Golden Fawn. One of these was 7 ft. wide where it had been developed, while a second was 6 ft. in width. The fifth ledge is the most recently discovered, float from it giving assays as high as \$50 to the ton.

success. The work will be pushed forward as rapidly as possible during the rest of the present month.

J. J. Hennessey, who bonded the Jennie Belle, has begun work on the property with a force of seven men. Most of the last week has been occupied in transporting supplies and material for the work. The price of the property was \$25,000.

TRAIL AND ROSSLAND.

Ore Receipts at Trail.

Ore receipts at the Consolidated Mining & Smelting Co.'s works at Trail during four weeks ended August 28, were as under:

East Kootenay—	Tons	Tons
St. Eugene.....	145	
Sullivan	2,607	
		2,752

Nelson—	
Emerald	142
Silver King	369
Yankee Girl	480
	991

Boundary—	
No. 7	59
District Not Specified—	
Bonanza	94
Golden Zone	22
Pittsburg	14
	130

Republic U. S. A.—	
Belcher	355
Ben Hur	1,206
Knob Hill	150
	1,711
Total	25,725

Rossland.

Le Roi No. 2 Ltd., has published the following report for July from its Josie



Rambler-Cariboo "Express" Hand Cars on which men travel 4,500 feet into Rambler-Cariboo Mine, Slocan.

Ymir.

Nelson Daily News correspondence is as under:

Reports from Ymir state that the ledge has been encountered in the lower workings of the Ymir-Wilcox mine, which proves the ore to extend to a depth of over 800 ft. The ore at this depth is as good, it is said, as that opened up on the 300 ft. level of the Wilcox.

Shipments of ore from the Yankee Girl mine are running much better than ever before. One car reached as high as \$50 per ton. The company is shipping about three or four cars a week.

Frank Smith and partner located a new lead on the Lost Cabin group last week and brought in some fine specimens.

The Anderson Brothers are busy at work on their claim on Porcupine creek, which is looking well. They expect to put in most of the summer months on this property.

Phil White is working a small force of men on the Sterling group with good

Ainsworth—	
Bluebell	463
Maestro	157
No. 1	233
Retallack & Co.	118
Silver Hoard	96
Utica	63
	1,130

Slocan—	
Eastmont	29
Idaho-Alamo	87
Noble Five	22
Rambler-Cariboo	262
Richmond-Eureka	31
Slocan Star	79
Standard	989
	1,499

Rossland—	
Centre Star	11,539
Giant-California	31
Inland Empire	25
Josie (Le Roi No. 2)....	1,706
Le Roi	4,042
	17,343

Lardeau—	
Ajax	88
Ferguson	22
	110

mine: Shipped 1,570 tons of ore and 103 tons of concentrate. The receipts from the smelter were \$13,530, being payment for 1,695 tons of ore shipped, and \$1,138 for 145 tons of concentrate; total receipts, \$24,668. Estimated costs for corresponding period were: Development, \$7,700, or production \$8,300, milling \$1,500, total \$17,500. Summarized, the development work was 173 ft. on the 500 ft. level, 40 ft. on the 700-ft. level, and 199 ft. on the 900-ft. level. The highest grade ore opened was that on the 700-ft. level, where the average for a width of 16 in. along 30 ft. was 16 dwt. gold per ton, and 6.25 per cent. copper.

Beside mentioning that early in August all construction work on the Richmond Consolidated Co.'s property, in the South Belt, had virtually been completed and that the installation of machinery was expected to be completed during the month, the Rossland Miner gave particulars concerning the Blue Bird, as follows:

"Before another month passes, mining operations in the South Belt of Rossland

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camp will be on in earnest. The Blue Bird will be added to the list of active properties, if present negotiations reach a satisfactory conclusion. Lyman Carter, who controls the property is in Rossland from Spokane, with W. R. Foley, an experienced mining man, from Denver, Colorado. Mr. Foley was here two weeks since and made a detailed examination of the Blue Bird. He will return to Spokane and will be in Rossland again for the meeting of trustees, on August 5. Mr. Foley was not in a position to give any definite information for publication beyond the fact that he does not represent any company. He is an experienced miner, who has been operating in Colorado, and for 20 years conducted mining operations in Cripple Creek. 'My associates and myself,' he said, 'are simply looking for a property which we think is worth proving. There are ample funds for development, and if negotiations are carried to a satisfactory conclusion, there will be no delay in commencing work. We visited the Richmond, and the showing there are remarkable and the construction work and equipment are certainly first class. My impression of the Blue Bird is good. I think there is a chance for a mine there.' The Blue Bird heretofore has been operated by Mr. Carter, who has shipped about 20 cars of ore to the Trail smelter. Some of that ore assayed more than \$300 to the ton. The property is equipped for operations and everything is in readiness to get up steam. Many Trail men are interested in it. Mr. Carter says the people here have no conception of the good words the outside world has for Rossland and the talk among mining men in Spokane indicates that it will be but a short time until general attention will be given to many idle properties here."

Paulson.

The outlook for mining appears to be improving in the vicinity of Paulson, which is situated on the Columbia & Western Railway, in the mountains between Columbia river and Christina lake.

Recently the Grand Forks Gazette published some information relative to the Inland Empire Co's property, as follows.

The opening up of a large body of high grade ore on the property of the Inland Empire Mining Co., Ltd., at Paulson, 32 miles east of Grand Forks, is now attracting attention. The ledge is about 6 ft. in width and contains value in gold and silver up to \$240 per ton. It was encountered when sinking a 40-ft. winze from the 70-ft. level, and has been exposed by outcrops, crosscuts, shafts and drifts for a distance of more than a mile. The Berlin vein, which runs parallel and also contains value in gold, has been demonstrated for more than 400 ft. Up to the beginning of last month about 1,400 feet of actual development work had been done on the Empire claim alone, and thousands of tons of ore blocked out. The company's property is equipped with hoists, compressor plant, and a saw mill, erected in 1911, and about a year ago the company installed hydraulic classifiers and vanners in its stamp mill. The directors of the Inland Empire company purpose further development vigorously to increase the tonnage, and will ship the higher grade ore. With the expected success they will substitute hydro-electric power and will also equip a mill of 200 or 300 tons daily capacity. The stockholders in the company are nearly all residents of Walla Walla, Wash., and it is expected that the excellent results which have been obtained in opening the Inland Empire mine will be the nucleus of a large mining camp near Paulson.

Whitewater.

Development work is to be resumed on the Eureka group by the Eagle Lode Mining Co., of Spokane, Washington, for which company Mr. E. R. Davidson is manager. The Eureka property is situated about a mile and a half north of Sproule, which is on the Kaslo and Slocan railway a few miles below Whitewater. The Kaslo Kootenai recently gave the following particulars:

E. R. Davidson, of Spokane, was in town this week arranging for the resumption of development on the Eureka, which property has been idle for some months. The work now to be undertaken is to be done by contract, J. M. Jarvis and associates, all Coeur d'Alene miners of experience having contracted to drive 1,000 ft. of tunnel on the ledge. This tunnel will be commenced at a point several hundred ft. below where the initial workings of the property are situated, or at an altitude of 7,296 ft. A few hundred ft. will suffice to run under the orebody opened by the first owners and from which several cars of high-grade ore were shipped in the early days, the Eureka having been numbered among the first of the Slocan shippers. The new tunnel will give a depth below the old stoping ground of some 400-ft., and it is expected that ore will be encountered early in the spring. The property was examined last fall by Mike Sullivan, the well known mining adviser of Patsy Clark and he advised Mr. Davidson to undertake development along the lines described. Work on the half mile tunnel that was first considered, has for the present been abandoned, according to Mr. Davidson, as he feels that the safest plan is to prove the property at the higher levels first. The ledge on the Eureka is from 4 to 5 ft. wide and its ore is high grade, containing about 100 oz in silver to the ton, and 70 to 80 per cent. lead.

LILLOOET.

Bridge River.

The Lilloet Prospector said recently: From reliable sources the Prospector has received information that the clean-up at the Coronation stamp mill for the first 14 days of operation, is valued at \$22,000. This result is considered highly satisfactory by those interested in the property, and is regarded as justification of the confidence which has been placed in the group and the expenditure of money upon its development. During the 14 days 1680 tons of ore was treated, with \$7 per

cent. recovery of assay value. The mill was running 24 hours a day. The returns give an average recovered value of \$13.10 per ton. All of the rock treated was taken direct from the mine. Upon the dump many hundreds of tons is ready for crushing. A second clean-up is to be made shortly.

BOUNDARY.

Grand Forks.

Figures published in the Gazette show the Granby Consolidated Co.'s production of blister copper in 1913, to the end of August, to have been 14,492,297 lb. from 829,970 tons of ore, of which 820,240 tons was from the company's own mines at Phoenix and 8830 tons custom ore. Largest monthly quantities were those of March, when the quantity of blister copper produced was shown as 2,020,000 lb. and of ore treated 108,871 tons—107,931 tons from Granby Co.'s mines and 940 tons of custom ore. August figures are: Blister copper produced, 1,827,300, from 101,722 tons of ore—99,641 tons from Granby Co.'s mines and 2081 tons of custom ore.

Shipment of ore from the Union group of mineral claims, in Franklin camp, north fork of Kettle river, has been commenced. It is stated that more than 100 tons of ore of shipping grade is on the dump and being sacked for hauling to the present terminus of the Kettle Valley railway, about 18 miles from Grand Forks. The ore has to be hauled in wagons 28 miles to the railway, whence it is taken to the Granby Co.'s smelting works. Cost of hauling to railway is given as being \$15 a ton, and railway freight and treatment charges at \$6. Value is in silver and gold. No ore had been sent out in bulk previously, from Franklin camp claims.

The Granby Consolidated Co. has declared a dividend of \$1.50 per share, payable on September 2.

Greenwood.

The Greenwood Ledge says there are 40 men working at the Jewel gold mine and stamp mill, and the production of ore is about 50 tons a day.

The Granby Consolidated Co. is reported to have bonded the Big Copper property, situated about five miles west of Greenwood, and to intend to do some diamond-drilling on it.

Midway.

A. E. Watts, a well known lumber-mill man of East Kootenay, and F. N. Knight, both connected with the management of the Boundary Mining and Exploration Co., were recently charged with five infractions of the Coal Mines Regulation act. For failing to report to the Department of Mines that a man had been burned by gas in the company's coal prospect workings near Midway, Watts was fined \$75 and Knight \$25, both with costs. Watts has appealed against the infliction of this penalty. On four other charges Watts was fined \$1 each, without costs. Similar charges against Knight were withdrawn. Watts at first disregarded a summons to appear at Midway to an-

swer the charges, but after a bench warrant had been issued for his arrest thought it best to put in an appearance. A minority of the shareholders are much dissatisfied with the present condition of the company's affairs.

Phoenix.

The Mining and Engineering World, Chicago, published the following paragraph on August 30: "The New Dominion Copper Co. will on September 1 meet the income bond interest due on coupon No. 4, provided stockholders are willing to forego payment of coupons 1, 2, and 3. It will be the first distribution of any kind to security holders since the last reorganization of the company that started its career as the Montreal & Boston Mining Co. The British Columbia Copper Co., which controls the New Dominion Copper Co. through stock ownership, will be the largest single beneficiary in this interest payment, as it has been coralling these bonds whenever possible during the past year or two. On the \$499,800 10-year-6 per cent. convertible income bonds the above-mentioned interest payment will require \$29,988. During its fiscal year ended March 31 the company for the first time operated at a profit, which approximated \$119,000. When the British Columbia Copper Co. assumed control of the New Dominion Copper Co. it contracted to handle the ores of the latter. Like the other ores in the district, the Dominion Co.'s ore has been extremely low-grade, and were it not for the high copper metal market the property would doubtless have continued its unsatisfactory showing."

SIMILKAMEEN.

Hedley.

The Hedley Gazette has published the following among its local news:

Messrs. G. P. Jones and T. Walter Beam have returned from Victoria, where they had been attending the sitting of the Investigating Board and Controller in reference to the disputed claim for water rights on the Similkameen river for power purposes to be used in Camp Hedley. The Hedley Gold Mining company had prepared plans to back up its contention that there will be room enough on the river for plants of the company and others by moving the proposed works of the prior holders a little further up the river on a less expensive site to build, and the Water Branch has also had engineers on the ground within the past fortnight to verify or correct the figures submitted. The case, together with reports of the Controller and engineers, has now gone to the Minister of Lands, in whose department the Water Branch is administered, for decision, and this is expected to be made known within a week.

Mr. H. B. Meausette was in town lately with some specimens of the Iceland spar, in which he is interested with J. Knudson, up Ashnola river, about ten miles from the railway. The samples were certainly interesting, and when the body, as described by Mr. Meausette, is so large the possibilities are great for making something out of it. The rhombohedral crystals are

everywhere in evidence, indicative of calcite in the purer forms, and while it is merely translucent and therefore unfitted for the finer uses of the transparent varieties such as that required in the manufacture of petrographical microscopes, because of its property of double refraction, the material they have up the Ashnola is doubtless sufficiently pure to warrant its use in other manufactures apart from its lime value. If the body could only be transported to the B. C. Portland Cement Company's works at East Princeton it would put them for all time to come on the easiest kind of easy street in supplying them with the calcareous portions of their raw material in the most desirable form they could possibly obtain.

Tulameen City.

News received from Summit camp, situated in the district about upper Tulameen river and distant from Tulameen City 20 to 25 miles, is to the effect that this season's prospecting work has much improved the outlook for the camp. During August development of the Treasure Mountain, Indiana, and Carbonate properties was continued, beside the prospecting of the group of claims under bond to Patrick Clark, of Spokane, and of others in the camp. In a crosscut on the Carbonate claim half of the 10 ft. driven shows stringers of lead and zinc ore, containing about 20 per cent. of these metals. This crosscut is being extended to the hanging wall, some 30 to 35 ft. farther, with indications of larger and better mineralized stringers occurring. Recently galena was found on each of three of Jensen & Carlsen's claims in the vicinity of the Carbonate, which is in Silver basin, Sutter creek, about three of Jensen & Carlsen's claims in latter with Tulameen river. All the properties above mentioned are on the eastern side of the Hope mountains; work is also being done on several likely-looking prospects on the west side of that mountain range. Transportation facilities are being provided, and this is encouraging expenditure of money on development work.

The Copper Mining Co., a Spokane corporation, recently organized with Conrad Wolfe president; F. R. Wolfe, vice-president, and Sidney Rosenhaupt, secretary-treasurer, the three composing the directorate, has taken a bond on five groups of five claims each, on the north end of Vancouver Island, 15 miles from Port McNeil. Development work has been commenced on the property.

Cowichan Station.

Several newspapers have published the following relative to the King Solomon property, situated at Koksilah mountain, three or four miles from Cowichan station, on the Esquimalt & Nanaimo railway: "When the Canadian Northern Pacific railway shall be in a position to supply ore cars, which will probably be next fall, the King Solomon mine will be ready to ship ore, and Utah capitalists will commence to realize on their investment in it. The mine was worked for a number of years, and when it had reached a stage of development which made it attractive to capital it was picked up by Utah investors. It

is situated eight miles from Duncan, on Vancouver Island, and though a large amount of money has been expended in its development, the rural settlers in the neighborhood are hardly aware that there is such a thing as a mine within miles of their farms. . . . The property is equipped with concentrating plant, and ore bunkers are being constructed. The railway grade passes directly by the dump."

It may be added that during several years, 1904-6, a local syndicate did some development work on this property and shipped some ore to the Tyee Copper Co's smelter at Ladysmith. The King Solomon adjoins the Bluebell group, owned by an English organization known as the Vancouver Island Mining and Development Co., Ltd., with office in this province in Victoria. In 1906 five carloads of ore shipped to Ladysmith from the Bluebell gave returns ranging from 5 to 8 per cent. copper. In the Annual Report for 1907 the Provincial Mineralogist included the following in his notes on mining in Victoria division: "At the beginning of 1907 a Sullivan diamond drill was installed and a series of holes put down on the formation to a depth of about 150 ft. each. The results were fairly encouraging and from the data gathered from this work it was decided to sink a shaft. Toward the end of the year this work was commenced, the incline shaft being now down about 110 ft. This is following the orebody, and although the point touched by the diamond drill has not yet been reached, the prospects are decidedly encouraging, at several points the ore showing fair value." The property has not since been mentioned in the annual report on Victoria mining division.

SHUSHANNA GOLD FIELD.

When in Vancouver, at the end of August, Dr. D. D. Cairnes, of the Geological Survey of Canada, gave a meeting of business men of the city his impressions of the Shushanna district, Alaska, from which he had just returned. Dr. Cairnes has done much geological investigation work in the North country, chiefly in Yukon territory, latterly in studying and mapping the geology along part of the 141st meridian (the Yukon-Alaska boundary), in accordance with an understanding arrived at between the United States and Canadian Geological Survey workers engaged in delimiting the International Boundary between Alaska and the Canadian Yukon. A published report of what Dr. Cairnes said in Vancouver, states that he spoke in a very cautious manner and did not give the impression that the Shushanna is an exceptional field. He was careful to lay stress on the fact that the area in which gold had been found in that part of Alaska is small and that all the ground had already been taken up. He is quoted as follows:

"It would be very foolish to go in there without a good outfit and prepared to spend the winter. It is absolute foolhardiness to stampede in there with the idea of getting out quickly. By this time there must be between one and two

thousand men on the ground and all the good ground was staked by the first 200 to get in.

"As to the strike itself, Mr. James told me that he first found gold on May 3. There is a story current that an Indian showed James where he could get gold, but I believe James found it himself. On July 4 they started sluicing and took out \$300 a day per man. The diggings are shallow and the gravel is not frozen. The creek bottoms are typical prospectors' diggings and with a shovel and pan it is easy to establish the nature of the ground in an hour or two.

"With the exception of that by James, on discovery, no great amount of gold has been taken out by any one as far as I am aware. The ground is staked for ten square miles and this includes mountain tops. Practically everything between Johnson and Wilson creeks has been taken up. Men going in after August 1 will find everything taken up around the strike, but there is a large country left to prospect. There are not many benches and the creeks are narrow. There is very little gravel on the benches with the exception of the old channel of Bonanza creek."

Describing the geological conditions, Dr. Cairnes said that similar bedrock conditions prevail 25 miles away on the Canadian side of the International Boundary, and it is quite probable gold will also be found in the Canadian Yukon part of the district. He added:

"The stampede has been greatly overdone. Undoubtedly it is the greatest stampede since that to the Klondike, but kindly note that I do not say it is the greatest strike since the Klondike. The trails are bad, with wet ground and a great amount of 'niggerhead,' but new trails are being constructed along the higher ground. We met many men who had very little idea of their position; one man was 15 miles from where he thought he was. Several parties were overdue when I left."

Dr. Cairnes states that the ground is at a high elevation and the creeks are practically all above timber line, but one gets the impression that it is low flat country despite the fact that the average elevation is above 5,000 ft.

There are five routes into Shushanna—two from Alaska and three from the Canadian Yukon. The first Alaska trail is from McCarty, but this is available only for eight to ten weeks in summer and is dangerous for pack animals. The other Alaskan route is from Fairbanks up Tanana river, and it is possible to get to the mouth of Johnson creek by water, but it is very dangerous. Rivermen think that light draft steamers can get to within 50 miles of Johnson creek.

Of the Canadian routes there is one from Skagway to Whitehorse 110 miles, thence by wagon road to Kluane Lake 145 miles, then trail to Canyon City 130 miles, from that point to where Beaver creek crosses the line and then into the diggings. Another route is by way of Whitehorse to Coffee creek and thence to Canyon City or by way of Snag creek. The latter is the shorter route and a new trail is being constructed, while roadhouses are being built at suitable places. Freight rates from Dawson

City, Yukon, are \$50 a ton, which Dr. Cairnes says is very reasonable.

Dr. R. W. Brock, director of the Geological Survey of Canada, who happened to be in Vancouver at the time, on his way to Dawson with an International Geological Congress excursion party, said that the whole country around Shushanna is favorable for prospecting, and added that he will not be surprised if some important discoveries are made in Yukon territory and northern British Columbia within the next year or two. He also made reference to the proposed railway through Alaska, and stated that one of the few available routes is by way of Kluane lake, White river, and Tanana river.

A press dispatch from Dawson is to the effect that the Canadian Customs Department has waived the restrictions on American goods crossing the Canadian Yukon to the diggings. Such goods in transit will be allowed to pass without the usual deposit, and where supervision shall be necessary to see that the goods are taken into United States territory, the expense of convoy will be borne by the Canadian Customs. This arrangement has been made by the Canadian government on the recommendation of Yukon Commissioner Black and Dr. Alfred Thompson, member for Yukon in the Dominion House of Commons. No U. S. customs duty is being charged on Canadian goods being taken across the boundary line to the diggings.

HEDLEY GOLD MINING CO'S MINES.

The Hedley Gazette states that there seems to be a persistent misconception on the outside as to the output of the Nickel Plate mine in Camp Hedley, Similkameen district. In particular it complains that the Daily News, of Nelson, placed the value of the output to the end of 1911 at \$2,500,000 to \$2,700,000, as compared with figures given in some detail by the Gazette which total to 1911, inclusive, \$3,810,910; further, that an official guide book compiled in Ottawa for the use of members of the International Geological Congress, shows a value to the beginning of 1913 of \$3,250,000, while the Gazette claims a total to that time of \$4,599,625. Adding the value of the production for seven months, to August 1, 1913, an aggregate value of \$5,104,373 is claimed by the Gazette.

Now, while the detailed figures printed by the Gazette are higher for each of three years, 1910, 1911 and 1912, than those published by the Hedley Gold Mining Co., as the value of the precious metal recovered in those years (the company's figures for other years are not at the time of writing accessible to the present writer), there is little doubt that the Gazette has good grounds for its protest against the persistent publication of misinformation concerning the aggregate value of the output of the Nickel Plate group of gold mines. There is just a possibility that the Nelson newspaper mentioned will admit its error, made in an account of the Hedley Gold Mining Co's property published in the Daily News of July 15, 1912, but it is too late for a change to be made in

the official publication which the Gazette states was prepared for the International Geological Congress. No information was given as to who was responsible for the mistake to which the Gazette has taken exception, but since Mr. Charles Camsell showed in his report on the Hedley Mining district, the recovered value of 153,000 tons mined and treated from 1904 to the end of 1908 to have been approximately \$2,142,000, there surely should not have been any difficulty in ascertaining the value recovered during the four years, 1909-1912. It would appear that the official statement, if as quoted by the Gazette, was about \$1,250,000 short of the actual amount, or more than 25 per cent. Such serious inaccuracy in a supposedly reliable publication is much to be deplored.

The detailed printed statement printed on August 28 by the Hedley Gazette is as follows:

Value of production to the end of 1907	\$1,617,229.49
Value for 1908, 44,068 tons at \$13.35 per ton	588,507.80
Value for 1909, 31,100 tons at \$11.58 per ton	360,138.00
Value for 1910, 44,828 tons at \$12.31 per ton	551,832.68
Value for 1911, 57,815 tons at \$11.99 per ton	693,201.85
Value for 1912, 70,455 tons as per statement	788,715.05
Value for seven months of 1913, to July 31	504,748.00
	<hr/> \$5,104,372.87

An excerpt from the Hedley Gazette's review of the Hedley Gold Mining Co's progress in the year 1912 may prove of interest at this time. In the course of its comments on the year's work the Gazette observed: "As might be expected from the fact that the dividends have been greater during the year last past than in any previous year, 1912 has been a year of breaking records and all former achievements have had to take second place. The quantity of ore mined and milled has been greater; the bullion produced has been greater; the mill has accomplished a higher duty per stamp; the extraction has been higher; and, more important than all of them, the development done during the year has shown up foot for foot a vastly greater amount of ore than ever before, with the result that the ore reserves have reached a point which puts the whole enterprise on 'easy street' for years to come, so far as the necessity for looking for new orebodies is concerned. No wonder the ore reserves have increased so enormously, when it is known that every bit of the development done in the Nickel Plate during the year has been all in ore."

In the published report for 1912 of the Hedley Gold Mining Co's general superintendent, the following statement is made: "We have no hesitation in stating that the minimum quantity of reserve ore, as shown by development and diamond drill, in the Nickel Plate and Iron Duke claims is 413,000 tons, and that this ore will average at least \$11.35 a ton." The president of the company reported: "We acquired in 1912 the adjoining claims known as the Windfall group, lying to the northwest of our property. Our exploration work demonstrated that the ores pass into this acquired territory, which promises well for a long life to our mines."

MAMMOTH BLAST AT MOTHER LODE MINE.

Included in the mining news published in the June number of the B. C. Mining Exchange was the following item: "Much drilling has been done in the British Columbia Copper Co.'s Mother Lode mine, in Deadwood camp, Boundary district, preparatory to breaking down another very large block of ground. About 3,000 holes, averaging 14 ft. each, have been drilled. Whenever ore in addition to that already broken down shall be required, all these holes will be charged and will be fired simultaneously by electricity. From 300,000 to 350,000 tons is the approximate quantity that will be broken down and available for shipment to the company's smelter at Greenwood after this blast shall have been fired." This news was supplied by E. Jacobs after he had

went with them. Everything occurred as Mr. Norcross had planned, and from the standpoint of that official the results from a mining point of view exceeded expectations. Electricity was the agent used to fire the charges which were connected by 16 miles of wire, and consisted of 24½ tons of 40 per cent. dynamite."

Method Described by E. Hibbert.

On March 22, last, The Engineering and Mining Journal, New York, printed an article on "Methods and Costs, Mother Lode Mine, B. C.," written by Mr. Hibbert. The synopsis of that article was as follows: "Gloryhole shrinkage, and spiral-raise systems abandoned for room-and-pillar method. Inclines run from a footwall raise and benches broken out. Pillars broken down by mammoth blasts. Electric firing used, wiring being done with great care. A cause of misfires discovered to be unbalanced circuits. Low costs obtained. Under suitable conditions, system offers great advantages, especially safety for miners."

After describing the way the mine had been opened and worked, Mr. Hibbert gave the following particulars of drilling the big pillars of left ore in the mine and wiring the loaded holes for electric firing:

"Mining the pillars constitutes one of the interesting points of the system. From the inside, the pillar is drilled out from top to bottom, holes being put in tops, sides, and bottoms of the inclines. The standard length of a hole is 14 ft., although in places where such long steel cannot be changed, shorter holes are put in, and in other cases, where necessary, 16-ft. holes are drilled. The pillars at the end of the mine farthest from the shaft are first drilled and an effort is made always to have several pillars drilled out ready for blasting.

"A large porphyry dike, 20 ft. thick, cuts through the orebody at the 200-ft. level, the dip of the dike being toward the footwall of the orebody at approximately the same angle as the inclines. The inclines are run above the dike and, so far, all pillars have been blasted from the dike to the surface, the dike being left intact so far as possible, in order that it may form a roof for the workings under the 200-ft. level.

"In blasting the pillars, 40 per cent. dynamite is used and all the holes in a pillar are loaded and then fired by means of electricity. In the first big blast, of October, 1911, the method used was similar to subsequent blasts, and may be described as typical. Loading was started on Monday morning, October 2, at 7 a.m., and continued until Wednesday morning, October 4, at 1 a.m. All the machine men were employed loading the holes under the supervision of the foreman and shiftbosses. The detonators were given to specially selected men, whose sole duty during the loading was to make up the primers and hand them to the loaders, seeing that the wires of the detonators were carefully unwound and free from kinks. The electrician commenced stringing lead wires on Tuesday morning, October 3, and when this was finished he started wiring up the most distant sections, connecting all holes in series of 25 to

visited the mine late in May and had been shown around underground by the then superintendent, Jas. J. Johns, who has since gone to Sudbury, Ontario, and who had charge of the work connected with previous big blasts under the direction of E. Hibbert, who was up to a short time previously superintendent of mines for the British Columbia Copper Co.

The firing of the mammoth blast that had for some time been prepared for is described by the Phoenix Pioneer, as follows:

"Enormous Blast at Mother Lode Mine.

"In order to profitably work the huge low-grade Boundary copper ore deposits, it is absolutely essential that mining operations be conducted on an unusually large scale. The British Columbia Copper Company's Mother Lode mine, near Greenwood, is a case in point, and for some few months, in addition to the ordinary work at the mine, the task of drilling 4,830 holes, averaging in depth between 14 and 15 ft., has been going on under the direction of the company's general superintendent, F. S. Norcross, jun. This system of breaking rock wholesale was inaugurated in 1911, but for dimensions the latest blast exceeded all others that have taken place in the history of that mine, or perhaps any other property on the American continent. It is said that upward of 200,000 tons of rock was displaced by the explosion, which resembled a miniature earthquake. Strange to say, the noise was not heard either here or at Greenwood, but at the latter town and at Midway a slight tremor of the earth was the only intimation the people had that the blast had taken place. Extreme precautions against accident were taken, and not only were the families of the mine employees ordered from the vicinity, but their household effects also

the lead wires. At 1 a.m. Wednesday morning, a special wiring crew, consisting of the superintendent, foreman, shiftbosses and a few picked men, was put on under the charge of the electrician, and the wiring was completed. The blast was exploded at 10:30 a.m. Wednesday morning, October 4, and broke 175,000 tons of ore.

"In this blast 2433 holes were loaded with 425 boxes, or 10½ tons of 40 per cent. dynamite. The holes were connected to the lead wires in series of 25, using 2525 Nobel's No. 7 low-tension detonators with 8-ft. lead wires, the extra detonators being used to make up the series of 25 detonators in a circuit in places where the holes could not easily be connected up to the lead wires in series of 25. When everything was ready for the blast, the main lead wires were connected to a 550-volt, alternating-current circuit. The main lead wires from the transformers were of No. 1, rubber-covered copper wire, and from these No. 6 and No. 8 weather-proofed copper wires led off. No. 10 and No. 12 weather-proofed copper wires again led from the No. 6 and No. 8 wires for the shorter circuits. All joints on the leads were covered with friction tape.

"The No. 7 low-tension detonators with 8-ft. lead wires have a resistance of one ohm and require ½ amp. for detonation. In the blast described, there were 101 circuits with 25 holes in series in each circuit, and as a current of ½ amp. was required in each circuit, a current of 101 x 0.5 or 50.5, amp., was required in the main lead wires, figuring no losses. Had connection been made to the 110-volt lighting system, the total resistance of the leads and detonators would require to be under 110 ÷ 50.5 or 2.2 ohm. With the wiring used this did not leave enough margin for safety, figuring on poor joints, etc., and so connection was made to the 550-volt circuit, especially as no instance had been noted at this mine where excess of power caused any trouble with complete detonation. As a matter of fact, in making the calculations for the voltage required, the amperage and resistance of the detonator were figured as one ampere and one ohm respectively.

"Owing to the time of year when the large blasts have been made, most of the dynamite probably freezes in the hole before the wiring is completed. In a large blast in April, 1912, this was certainly the case, as previous to loading, the holes were full of ice and a steam pipe had to be run into the mine and the holes blown out with steam. In spite of this, very little dynamite is found in the broken ore, it being estimated that only one-quarter to one-half of the dynamite met with in the broken ore from ordinary incline and bench work is met with in the broken ore from a large electrical blast. This may be due to the large detonators, No. 7, used in the blast and some sympathetic detonation, or detonation caused through the explosion in adjacent holes, may also take place.

"A curious effect of a large blast set off in this manner is the small disturbance produced; adjacent ground is only slightly affected and persons a short distance away from the mine are un-

aware that anything out of the ordinary is taking place. This is probably because all the various parts of the section of the orebody are shattered at the same time, and the disturbance caused by the explosion in the centre of the orebody meets with broken ground before it reaches the walls and is neutralized and consequently the only effect produced on the walls is caused by the explosion in the holes immediately adjacent to them.

"In connection with electrical blasting, care must be taken that the resistances in the various circuits are well balanced, so that all the detonators will explode at the same time. The best way to insure this is to use large lead wires and to take care that the same number of detonators are connected up in each series. This was brought to our attention in a rather forcible manner. On one occasion a small blast had to be exploded and the electrician did the wiring for it. He had been instructed to see that all the detonators were connected up in even series, but on this occasion there were 101 holes to be connected, and he took the chance of making three series of 25 holes and one of 26 holes, the last series being nearest to the main leads. After the blast it was noticed that the three series of 25 holes had exploded, but the series of 26 had failed to explode; fortunately the unexploded holes were easy to rewire. It was considered possible that if the speed at which the fuse wires in the detonators reach the detonating temperature was less than the speed of explosion, then, given suitable conditions, the explosion from the series of 25, could break the lead wires of the series of 26 before the fuse wires in these detonators had reached the detonating temperature, and so cause the failure to explode.

"Some experiments were made to test out this idea. Two detonators were wired in series and one lead wire was wound round a single detonator. The detonators were then connected to batteries. The single detonator exploded, broke the lead wire connecting with the other detonators, and the latter failed to explode. This showed that with the current employed the speed of explosion of a detonator was greater than the speed of heating up the fuse wire in a detonator. Similar results were obtained by connecting up in this manner series of two and three, and series of three and four detonators. It is possible that the failure of the 26 holes to explode may have been due to some other cause, but the experiments showed clearly the necessity for having well balanced circuits with the same number of detonators in series in each circuit."

GOLD MINING IN LILLOOET DISTRICT.

Mining and Scientific Press, San Francisco, California, recently published the following information relative to gold mining in Lillooet district:

This is one of the oldest mining districts in the province, the first discovery being of placer gold on the bars of the Fraser river about 1856. Placer mining, both by sluicing and hydraulicking, was carried on until 1899, not only on the

Fraser river, but also on the tributaries of the Bridge river, which empties into the Fraser a short distance above the town of Lillooet. Until 1897 the chief producers were Tyaughton, Sucker, and Cadwallader creeks, and the South Fork of Bridge river, situated about 70 miles from the town of Lillooet. In 1897, prospecting for gold-bearing quartz was commenced, resulting in the discoveries of several outcrops of free-milling quartz veins on Cadwallader creek, from near its mouth, where a group of claims known as the Forty Thieves was located, to the Countless group of claims, about seven miles easterly and on the same creek.

During a visit made by W. M. Brewer to the district in 1898, he found the ground between these points all staked, and the outcrops of oxidized ore not only yielded some high-grade specimens, but so far as could be judged at the time, indicated that these outcrops were filled fissure veins possessing characteristics of permanence and continuity along the line of strike, which is, generally speaking, northeast and southwest. The district at that time, though, was almost inaccessible, the cost for freighting in supplies being about 9 cents per pound, from Ashcroft on the Canadian Pacific railway, the town of Lillooet itself being about 50 miles from that railway. In 1901, operations were practically abandoned in the district, and from that time until 1911 there was no work done except assessment by a few "old-timers" at Lillooet, who had faith in the country and believed that some time the town would be resurrected.

The revival was brought about early in 1911 by Arthur Noel, who may be called the father of quartz mining in northern British Columbia. He succeeded in interesting James Dunsmuir, H. B. Thomson, and B. J. Perry, of Victoria, who later purchased the Ben d'Or group on which the first discoveries of high-grade gold-bearing quartz had been made in 1897 by Mr. Noel. These gentlemen organized the Coronation Mines, Ltd., with H. B. Thomson, president of the company, and C. L. Copp, manager, and about July 15 the first clean-up from 188 tons of ore, yielding \$9000, was brought to Victoria. This naturally attracted considerable attention because, although the Ben d'Or mines had not been heard of as a producer since March, 1901, previous to that it had produced \$64,808 from 5520 tons of ore. The ore from which the recent clean-up was made came from the Little Joe claim and from a stope about 200 ft. lower elevation than the old workings on that claim.

From a report made by Mr. Brewer on the property in April, 1901, the following is extracted, confirming the conclusions drawn then, and such have been proved to be correct by the work done during the past two years:

"The Little Joe vein has the following characteristics: a true fissure, strike north 75 deg. east magnetic, which is the general trend of the vein where exposed across the Little Joe and Countless claims. With slight variations this vein apparently maintains continuity a distance of about seven miles, and dips 65 deg. to the north, with a width varying from 12 in. to 3 ft., in the under-

ground workings. The outcrop of oxidized quartz is traceable on the surface by cross-cuts at variable distances apart for a distance of 4500 ft. The hanging wall is a highly silicious rock, probably an altered gneiss, extremely well defined and unbroken the entire length of the underground workings. Foot-wall is the same as hanging wall, with similar conditions. Vein filling consists of riband quartz, talcose gouge, and some schistose rock. Oxidized ore probably extends down to a great depth."

When the present owners acquired this property, all the old workings that the above mentioned examination in 1901 described, had caved in, consequently new working openings were started, both on the Little Joe and Countless claims, which today aggregate as follows: on the Little Joe, drift No. 3, 251 ft. below the outcrop is 361 ft. in length; cross-cut No. 4, 89 feet below No. 3 drift, is 505 feet in length, with a drift from this 500 ft. in length and having ore for 375 ft. This ore-shoot has been connected with the shoot which was stoped in the old working, and the ore from it yielded in the mill about \$40 per ton in free gold. On the Countless, a cross-cut adit 545 ft. long, 275 ft. below the surface, has been driven to ore. The most easterly group of claims situated on this belt is the Countless. Traveling westerly from that, are the Ben d'Or (now known as the Coronation), Blackbird, Ida May, Lorne, Woodchuck, and Forty Thieves. Each group comprises several mineral claims and some fractions, each full claim being 1500 ft. square, and fractions of variable size.

The present means of transportation into the district are very different from those available either in 1898 or 1901, because it is possible at present to drive a wagon or even an automobile from Lytton station on the Canadian Pacific railway to Lillooet, a distance of 48 miles, and from Lillooet to the mine, a distance of 70 miles, and owing to these improved transportation facilities, renewed interest has been taken by prospectors who this year are exploring the adjacent country. A 10-stamp mill was hauled to the Little Joe during the winter of 1898-9, at a cost approaching 18 cents per pound for freight. This mill is today reported to be in excellent condition, and the ore recently treated was crushed in it by water-power furnished from Cadwallader creek, which was developed at the time the mill was erected in the summer of 1899, and is amply sufficient to drive heavier machinery than the present equipment.

AUFEAS LEDGE 17 FEET AND WALL NOT REACHED.

After a delay due to the necessity of timbering, the driving of the Aufeas tunnel was resumed during the week and up to last night eight feet more had been driven still all in ore, making a width, now known, of more than 17 feet and the farther wall not reached, says the West Yale Review of the 16th inst.

Details of the assays, a brief summary of the result of which was given last week, are now to hand. Only seven

samples were taken, all differing in appearance—the ore is not uniform in either character or appearance. A piece of white quartz assayed \$3.35, dark quartz \$4.29, mispickles and quartz \$6.04, a large piece of dark ore \$6.60, mispickles and white quartz \$9.37, pyrites \$173.02 and pyrites and dark quartz \$62.46. The last two results were checked by a second assay. The total for the seven samples was \$265.13, an average of \$37.87. The highest value in silver was 65 cents, in copper one per cent.

After the hanging wall is reached a thorough sampling will be made across the whole width of the lead, the assay of which will give more accurately the average value of the ore body.

The resemblance to the Nickel Plate property is further exemplified by the occurrence of the high grade ore in strata separated by layers of quartz which are themselves heavily mineralized. At the Nickel Plate the whole ore body, strata of mispickles and intervening quartz, is milled giving a value of about \$11 a ton. A similar method will ultimately have to be followed at the Aufeas. The first test gives ground for hope that the ore will be distinctly higher grade than the Nickel Plate's, but there are not enough data to warrant an assertion to that effect. One difference between the Aufeas and the Hedley camp property is that in the latter the strata are horizontal, in the Aufeas they are vertical.

SUPPLEMENTARY REPORT FROM THE DIRECTORS OF AUFEAS GOLD MINES LIMITED

At the annual meeting of the Aufeas Gold Mines Limited the directors were instructed to prepare as soon as possible a supplementary report on the property for circulation among the shareholders. The report has now been completed to date and is as follows:

Owing to the absence of the managing director no official report of the progress of the work on the property or its present physical condition was made to the shareholders. In the absence of such report the stockholders instructed the Board of Directors to supplement the financial report for the year with a statement showing what development has been accomplished, and the following is therefore submitted:

The property was dormant until February, 1913, when operations commenced. A camp consisting of three good buildings accommodating 20 men was built at the mouth of Wardle Creek. Following this the work of driving the lower tunnel was commenced and has been prosecuted continuously ever since.

On July 26th (the day our annual meeting was held), at a distance of 395 feet from the portal, the tunnel broke into an ore vein of such large dimensions that this report has been held for ten days to determine the width of it. Your directors are pleased to report to you that after ten days' work it is shown that we have a body of ore nine feet in width. Of seven samples assayed the average value was \$37.87 per ton.

The appearance of the rock now in the face indicates still more ore ahead.

The ore is known as arsenopyrites and is exactly similar to the ore in the Nickel Plate Mine at Hedley Camp about 70 miles distant from our property. The Nickel Plate has paid large dividends for years and is considered to be the largest gold mine in British Columbia. This fact is simply mentioned to give our stockholders an idea of what we may reasonably expect from our property.

The tunnel broke into the vein at a depth of 450 feet from the surface, and, as the ore had previously been uncovered on the surface for a continuous distance of 300 feet without finding either end of it, we think it fair to assume that development during the next 90 days on the tunnel level will disclose the same or greater length of ore body at that depth.

Six cubic feet of this ore constitutes a ton and a simple computation of the tonnage of ore now disclosed will give an idea of the value of the property.

The work for the ensuing year will consist of the immediate erection of the tramway for transporting the ore from the portal of the tunnel to the wagon road, driving shafts in the ore to the north and south, upraising in the ore from the tunnel level to the surface and driving intermediate drifts from this upraise. We do not think it advisable to start stoping out ore at this time as the ore produced in doing development work alone will tax the capacity of the tram to its limit and heavy production by stoping should be delayed pending the erection of our own works for reducing our ore on the ground, all the details of which will be worked out in the near future.

A. E. RAAB
L. B. CLEAVES
W. T. HIREN
L. N. JENSEN,
Directors

Hope, B.C., Aug. 6th, 1913.

MINING AT TWENTY-THREE MILE.

The West Yale Review of the 16th inst. says:

The mining situation at 23-Mile is clearer and more encouraging than ever before. All the claim owners have done their assessment work and all have showings they are prepared to submit for inspection. Several are now the subject of negotiations.

W. Robinson, one of the syndicate owning the Silver Daisy group, has been asked by the head of the mining department of the Vancouver Exhibition to arrange for the display of a collection of ore from 23-Mile and to attend the Exhibition to give information about the district.

The Surprise at Cody is this week sending down on the aerial tram a shipment of about 50 tons of ore, says the Slocan Record of the 28th inst. This is the first shipment for nine years, and it is probable regular monthly shipments will now be made.

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VANCOUVER, B. C., AUGUST, 1913.

EDITORIAL.

While full and extensive particulars are given elsewhere in the present issue regarding the visit to this province of the two large excursion parties of members of the International Geological Congress, a word may fittingly be written here in appreciation of the excellence of the arrangements made for the entertainment of the visitors during their brief stay, and of the many ladies and gentlemen whose public-spirited exertions were so ably directed to the end that the scientists should take away a pleasant memory of British Columbia hospitality. In this connection, especial mention must be made of Mr. E. Jacobs, the indefatigable secretary of the Western Branch of the Canadian Mining Institute; Mr. W. Fleet Robertson; Hon. Mr. Bowser and Mrs. Bowser; Mr. W. J. Sutton; Mr. Wm. Templeman; Baron A. von Girssewald; Mr. R. P. Butchart; Mr. S. H. Reynolds; G. G. Aitken, provincial geographer; Mrs. Fleet Robertson, Mrs. Hasell, and many others, amongst them those who kindly lent automobiles.

In another column appears some particulars in reference to the gold strike at Shusanna, in Alaska, close to the

Canadian border—indeed, it is probable, according to well-informed authorities, that it will eventually be found that the new field extends well into Canadian territory. It is early days to offer any authoritative opinion as to the extent and permanence of the find, but a gentleman well-informed and personally acquainted with the district told the writer that, the new diggings being shallow and the gold found being, in the majority of instances, of a coarse character, he looked less for the establishment of a new Klondike than the development of a rich quartz-mining gold area. The point is of some interest, as lode-gold mining on a large and permanent scale would simply revolutionize conditions in the Northern Yukon and Alaska. In the meantime, we would especially call the attention of those who are contemplating a bid for fortune in the new diggings to the warnings which are being sent out by competent and experienced men regarding the folly of attempting to venture without thoroughly adequate supplies and equipment.

An interesting review of the recent outbreak in the coal districts of Vancouver Island, and of the causes which led to the strike, will be found on another page. The exhibition of mob-violence and cowardice which disgraced the coal-town in the middle of the present month amply justified the action of the Hon. Mr. Bowser, Attorney-General of this province and Acting-Premier in the absence of Sir Richard McBride. Mr. Bowser, who evidently holds to the fine old-fashioned belief that the first duty of a Government is to keep order, despatched troops to the scene of trouble with great promptitude. As soon as the heroic champions of Labour found themselves faced by real men—instead of the fat storekeepers and terrified women and children whom they had hitherto been successfully bullying—all disorder ceased as if by magic. Not another shot was fired, not a blow struck, after the arrival of the troops—although the strikers outnumbered the soldiers five to one and were better armed besides. The ringleaders were gathered in by hundreds and are now undergoing trial. For this reason, we make no further comment on the affair in this issue, other than that the whole strike and disturbance was bought and paid for by certain of the coal interests in the State of Washington—in precisely the same manner and by the same employment of professional labour agitators as was the case at the Springhill collieries in Nova Scotia a year or two ago. The conditions which have

rendered the recent disturbance possible have been growing in intensity for some years past, and we propose in an early issue to discuss these conditions and their remedy. For the present, our congratulations to the Hon. Mr. Bowser for having displayed the qualities of both soldier and statesman at a critical moment by tackling what might easily have become a very dangerous situation with an iron hand. Mr. Bowser's political opponents are rather fond of abusing him for being a "Napoleon" in his methods. We make bold to say here and now that Canada is in great need of a few Napoleons at the present time. Her own great natural wealth, taken in conjunction with the slavish subservience of the bulk of her rulers to every whim of the "popular vote," and the gross extravagance and luxury which have for years past been softening and corrupting all classes throughout the Dominion—these are things which, in combination, are rapidly reducing her to the condition of an easy victim to just such conspiracies as that which the firmness of the Hon. Mr. Bowser has this month nipped in the bud. Yes, a few Napoleons are badly wanted just now. The "whiff of grape-shot" with which the Little Corsican broke the tyranny of Robespierre and sent the scoundrelly mob of Paris howling to their kennels would have been no bad medicine for the cowardly mobs of the Vancouver Island coal-town on the nights of the 12th and 13th of this month.

The conditions of metallurgical mining in the Coast districts of British Columbia have never looked so favourable as at the present time. The news we publish this month of the satisfactory progress of the Granby Co.'s operations at Hidden Creek, the steady development and output of the Britannia mines on Howe Sound, the increasing output of high-grade ore from the new Hazelton camp, and the opening of new properties at various points on our seaboard, all show very clearly that the Coast mining districts of British Columbia are entering upon an era of successful development which will in the very near future place them in the front rank of the ore-producing sections.

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LATEST METAL MARKETS.

(From Chicago Mining and Engineering World.)

Silver.—Quotations at New York for bar silver per ounce and at London per standard ounce for the week ending Aug. 27, were as follows:

	New York	London
	Cents	Pence
Aug. 21	59 1/2	27 5-16
Aug. 22	59 1/2	27 5-16
Aug. 23	59 1/2	27 5-16
Aug. 25	59 1/2	27 9-16
Aug. 26	59 1/2	27 7-16
Aug. 27	59 1/2	27 3-16

MONTHLY AVERAGE PRICES OF SILVER

	New York	
	1913	1912
Month.	High. Low. Avg.	Avg.
January	63 1/2 61 1/2 62.928	56.259
February	62 1/2 58 1/2 61.625	59.943
March	59 1/2 56 1/2 57.969	58.360
April	60 1/2 57 1/2 59.540	59.265
May	60 1/2 58 1/2 60.300	60.754
June	60 1/2 58 1/2 58.975	61.265
July	59 1/2 58 1/2 58.423	60.615
August .....	...	61.000
September .....	...	63.394
October .....	...	63.594
November .....	...	62.750
December .....	...	63.390
Year .....	...	60.837

Copper.—Copper showed increased strength last week, due largely to increased buying operations on the part of foreign and domestic consumers, who had hitherto been reluctant to place orders and contracts for more than meager tonnages, and, although domestic producers were generally unsuccessful in their efforts to obtain 16 cents for electrolytic metal, they succeeded in marketing numerous large lots both abroad and at home on a 15 1/2 cts. basis. In Europe prices dropped £1 on both American electrolytic and European selections. The result of the fluctuations in standard copper at London was a break of £1 2s 6d on spot and futures, but it has since advanced. Best selections also declined £1 to £71 15s net at the close. Standard copper at New York was dull and nominal, being quotable at 15 1/2 to 15 3/4 cts. cash at the close of the week for September, October and November shipment.

There was some small buying by American consumers early in the week for September and October shipment, but there was less demand at the close. Electrolytic is now quotable at 15 1/2 cts. for September and October and 15 1/4 to 15 3/4 cts. for October. In Europe American electrolytic was offered at £71 10s at the close of the week.

Imports last week included 1560 tons copper, 1050 tons matte and 1100 tons ores, and since Aug. 1 the arrivals at Atlantic ports only included 4965 tons copper, 1605 tons matte and 1175 tons ore.

Quotations for copper per pound at New York and per long ton of 2240 lbs. at London for the week ending Aug. 27 were as follows:

	Lake	Elec	Cast	Standard
				London
Aug. 21.16—..	16—15 1/2	15 1/2—15 1/2	15 1/2—15 1/2	£68 13 9
Aug. 22.16—..	16—15 1/2	15 1/2—15 1/2	15 1/2—15 1/2	68 11 3
Aug. 23.16—..	16—15 1/2	15 1/2—15 1/2	15 1/2—15 1/2	68 11 3
Aug. 25.16—..	16—15 1/2	15 1/2—15 1/2	15 1/2—15 1/2	69 10 0
Aug. 26.16—..	16—15 1/2	15 1/2—15 1/2	15 1/2—15 1/2	70 0 0
Aug. 27.16—..	16—15 1/2	15 1/2—15 1/2	15 1/2—15 1/2	70 7 6

MONTHLY AVERAGE PRICES OF COPPER

	New York—Lake Superior	
	1913	1912
Month.	High. Low. Avg.	Avg.
January	18 16 1/2 17.116	14.626
February	16 1/2 15 1/2 15.306	14.911
March	15 1/2 15 1/2 15.731	16.092
April	16 1/2 15 1/2 15.966	16.391
May	16 1/2 14 1/2 15.445	17.612
June	15 1/2 14 1/2 14.770	17.636
July .....	...	17.694
August .....	...	17.724
September .....	...	17.753
October .....	...	17.750
November .....	...	17.750
December .....	...	17.750
Year .....	...	16.695

	New York—Electrolytic.	
	1913	1912
Month.	High. Low. Avg.	Avg.
January	17 1/2 16 1/2 16.983	14.425
February	16 1/2 15 1/2 15.717	14.435
March	15 1/2 15 1/2 15.065	14.853
April	15 1/2 15 1/2 15.620	16.003
May	16 1/2 15 1/2 15.896	16.326
June	16 1/2 14 1/2 15.203	17.505
July	15 1/2 14 1/2 14.646	17.418
August .....	...	17.694
September .....	...	17.706
October .....	...	17.745
November .....	...	17.750
December .....	...	17.750
Year .....	...	16.634

Tin.—There were but very slight fluctuations in tin prices last week. The tendency was downward in the domestic markets, but there has since been a reversal.

It is estimated that the arrivals at Atlantic ports this month will be about 3400 tons, and deliveries into American consumption are expected to be about 3700 tons. Shipments from the Straits are estimated at 5800 tons. To date arrivals at Atlantic ports have been 2668 tons, and 2355 tons are still afloat, of which about 700 tons will make August delivery here.

The London market for standard contracts was quiet most of the week, with narrower fluctuations resulting in a net decline of 10s on spot and futures.

The Singapore market up to Friday also declined 10s net for the week, but was quotable about 10s lower, or nominally £187 10s c. i. f. London on Saturday.

Quotations for tin at New York and at London for the week ending Aug. 27 were as follows:

	New York	London
	1913	1912
Month.	High. Low. Avg.	Avg.
Aug. 21	41.50—41.15	£187 15 0—186 10 0
Aug. 22	41.50—41.00	187 5 0—186 5 0
Aug. 23	41.50—41.00	187 5 0—186 5 0
Aug. 25	41.50—41.05	187 15 0—186 5 0
Aug. 26	42.00—41.62	190 0 0—189 5 0
Aug. 27	42.75—42.25	192 10 0—191 12 6

MONTHLY AVERAGE PRICES OF TIN

	New York	London
	1913	1912
Month.	High. Low. Avg.	Avg.
January	51.25 49.50	50.414 43.275
February	50.30 47.30	48.738 43.345
March	48.50 45.62 1/2	46.844 42.690
April	50.25 47.37 1/2	49.075 43.970
May	50.75 47.10	49.15 46.055
June	46.75 42.50	45.071 48.046
July	47.75 38.75	40.349 44.665
August .....	...	45.849
September .....	...	49.232
October .....	...	50.073
November .....	...	49.869
December .....	...	49.899
Year .....	...	46.330

Lead.—Lead was firm but quiet throughout the week. On call at the New York metal exchange 4.70 cts. was bid for spot, August, September and October, without offerings, with September offered at 4.90 cts. and October at

4.95 cts. on Friday. On call 4.60 cts. was bid for spot, August, September and October, with September offered at 4 3/4 cts. and October offered at 4.80 cts. on Friday.

Quotations for lead at New York and at London for the week ending Aug. 27 were as follows:

	New York	London
	Cts. per lb	Per Ton
Aug. 21	—4.70	£20 7 6
Aug. 22	—4.70	20 6 0
Aug. 23	—4.70	20 6 0
Aug. 25	5.00—4.70	20 7 6
Aug. 26	—4.70	20 10 0
Aug. 27	5.00—4.70	20 10 0

MONTHLY AVERAGE PRICES OF LEAD

	New York	
	1913	1912
Month.	High. Low. Avg.	Avg.
January	4.37 1/2 4.25 4.301	4.435
February	4.35 4.25 4.30	4.068
March	4.40 4.25 4.340	4.167
April	4.45 4.30 4.381	4.213
May	4.55 4.25 4.418	4.164
June	4.40 4.25 4.336	4.395
July	4.50 4.30 4.355	4.669
August .....	...	4.681
September .....	...	5.071
October .....	...	5.088
November .....	...	4.633
December .....	...	4.200
Year .....	...	4.482

Spelter.—Spelter was moderately active and 5s to 10s higher last week. On call at the Metal Exchange 5.75 cts. was bid for spot and August, with 5.90 cts. asked; 5.80 cts. was bid for September and October, with 5.95 cts. asked, on Friday. On call at the Exchange 5.60 cts. was bid for spot and August and 5.70 cts. for September and October, with 5.80 cts. asked for September and 5.90 cts. for October, on Friday.

London advanced 2s 6d net last week. G. M. B. closed at £20 12s 6d, against £20 10s on the preceding Friday.

Quotations for spelter at New York and at London for the week ending August 27 were as follows:

	New York	London
	Cts. per lb	Per Ton
Aug. 21	5.90—5.75	£2 12 6
Aug. 22	5.90—5.75	20 12 6
Aug. 23	5.90—5.75	20 12 6
Aug. 25	5.90—5.75	20 12 6
Aug. 26	5.90—5.80	20 17 6
Aug. 27	5.95—5.85	21 0 0

MONTHLY AVERAGE PRICES OF SPELTER

	New York	London
	1913	1912
Month.	High. Low. Avg.	Avg.
Jan. 7.40	6.40 7.192	6.505 26.115
Feb. 6.80	6.15 6.406	6.541 25.385
Mar. 6.45	5.70 6.222	6.817 24.130
Apr. 5.95	5.45 5.712	6.799 25.305
May 5.55	5.25 5.477	6.85 24.385
June 5.35	5.00 5.169	7.011 22.227
July 6.65	4.30 5.279	7.229 20.609
Aug. ...	...	7.042 ...
Sept. ...	...	7.553 ...
Oct. ...	...	7.550 ...
Nov. ...	...	7.429 ...
Dec. ...	...	7.331 ...
Year ...	...	7.053 ...

In the shaft of the Apex near New Denver, at a depth of 53 feet, a vein 18 inches in width was uncovered, says the Slocan Record. The vein is quartz, carrying gray copper and ruby silver, dry ore. The assay values have not yet been obtained, but the ore will probably run very high in silver.

At the Wonderful, near Sandon, from thirty to forty sacks daily of ore are being taken out of the recent discovery.

Coast and Island Mining

Remarkable Progress In Coast Mining—Portland Canal Notes—Mining on Texada Island—Good Work of Portland Canal Tunnels, Ltd.—The Coal Situation on Vancouver Island—The Britannia Mine—General News.

VANCOUVER MINING DIVISION.

Vancouver.

A local newspaper states that a syndicate of Vancouver men has purchased the old copper mine known as the Bowena property, situated a mile and a half south of Snug cove, on Bowen Island; also that there is 200,000 tons of ore in sight, a sample of which went \$13.20 to the ton. The average width of the vein is given as 10 ft. The face of the tunnel is 45 ft. above salt water.

The ore production of the Britannia Mining & Smelting Co. from its Britannia mine near Howe Sound, which to the end of August had totalled 131,969 tons for the expired eight months of the year—an increase of 11,309 tons over the output of the corresponding period of 1912—shows that the company is energetically proceeding with the work of mining. In addition a large amount of development and construction work is being done, these serving to emphasize the fact that the company intends to build up within a comparatively short distance of the city of Vancouver an important copper producing industry. It is a matter for earnest congratulation that wealthy capitalists are continuing to spend much money in mining on a large scale in this division, and their abundant success is greatly to be desired as a fitting return for their enterprise.

Atlin Mining Division.

Information concerning Rainy Hollow, in the extreme northwestern part of the province, published in Vancouver late in August was to the following effect:

"Mr. R. G. McConnell, of the Dominion Geological Survey, has returned from Rainy Hollow, a copper and silver lead mining camp of great promise in northern British Columbia. The camp is reached by Trail from Haines Mission, near Skagway, a distance of 60 miles. Mr. McConnell stated that he spent a fortnight in the camp examining various showings.

"Although the first locations were made in the first days of the rush to the Klondike very little development work has yet been done, the owners apparently being content to await the advent of outside capital. That the mineralized belt is of considerable extent is evidenced by the fact that the visitor inspected claims over four miles apart. With regard to the output he declined to say as to ore tonnage possibilities. The copper ores comprise bornite and chalcopryrite and silver lead of very high grade. Mr. McConnell expects that a more detailed examination of the claims will be made next year. He will accompany the visiting geologists on their return to the Yukon district."

An article on Rainy Hollow, contributed to the Mining Magazine, London, England, by Mr. J. W. Bryant, for several years chief mining engineer for the Tyee Copper Co., was reprinted in the B. C. Mining Exchange for December, 1912.

Skeena.

Smelter returns from 282 tons of ore shipped from the Silver Standard mine, situated a few miles from Hazelton, to the Consolidated Mining and Smelting Co.'s smelting works at Trail, B.C., give the following metal recoveries: Gold, 63,323 oz.; silver, 40,883.28 oz.; lead, 149,525 lb. The net value of the whole was \$30,000.61, or \$106.385 a ton after payment of freight and treatment charges. Other properties are making small shipments of ore, but generally for test purposes. In most cases development work only is being done, facilities for transportation of ore from mines to railway not yet having been provided. By next year the present temporary freight tariff will have been replaced by a regular, and it is expected a lower, tariff, after which production and shipment of ore will be undertaken by a number of mine owners not yet ready to make an output.

Mr. Jos. Trethewey, the Cobalt mining man who is interested with Frank Martin in the White Heather group, visited the property lately, says the Omineca Miner. He expressed himself as well pleased, not only with the property in which he is interested, but also with others on Hudson Bay mountain. A small crew is working on the White Heather at present, but larger operations are planned. Mr. Martin is preparing to make a shipment of ore, much of which carries native silver. The first shipment will probably be made to Trail.

Mr. A. McDonald, of Vancouver, who recently returned from the north, has announced his discovery of a large deposit of bituminous coal on the Kitseukla river, near its head waters. The coal is an excellent grade of coking coal and he has staked a block of 10 sections, and states that on every one of these he has found a wide seam. Mr. McDonald brought samples down with him. A few of them have been analyzed, and they show about 53 per cent. fixed carbon and 15 per cent. ash. Speaking of his trip, Mr. McDonald states that the coal field can be reached by going in from Moricetown and up Trout creek. He is of the opinion that an excellent road or railway could be built to the coast for the transportation of the coal. The Kitseukla coal field is just the other side of the mountain from the Copper River coal field, and Mr. McDonald believes it is a continuation of the same seam. Two men accompanied

him on his trip, and did considerable work on the locations."

Queen Charlotte Islands.

Two newspapers published on Graham Island mention the arrival recently at Masset of Capt. A. Harman, a director of the Graham Island Coal and Timber Syndicate, and his visit to the company's property on Yakoun river. He was met at Masset by Mr. F. C. Wright, superintendent for the company, and shown over the property.

It has been reported from Moresby Island that 4 ft. 6 in. of ore assaying up to \$320 to the ton has been encountered in a winze being sunk from the 200-ft. level on a property on Cumshewa inlet. This is understood to be the property of the Queen Charlotte Mining and Development Co., concerning which the District Gold Commissioner said in his 1911 report: "This company, which owns the Homestake group, on Cumshewa inlet, has operated continuously the past year, employing some 10 men. Development work done during the year consists of 1200 ft. of tunnel-driving and 65 ft. of shaft-sinking. New buildings, including an assay office, were erected. Much ore has been blocked out. It is the company's intention to construct a wagon road in the spring half a mile to tidewater; also probably to build a wharf. The Homestake group consists of the Homestake No. 4, and Go East, all Crown-granted; beside these, the company owns several other mineral claims. The ore assays high in gold value, the native metal often showing. The company's registered office is in Victoria and its head office in London, England. Chas. E. Pomeroy is superintendent, and J. W. Austin assayer." In the official report for 1912 it was stated that the company had operated continuously throughout the year, employing 12 men. Its underground development work consisted of about 600 ft. of tunneling, 170 ft. of raising, and 50 ft. of sinking. Half a mile of wagon road had been constructed from the mine to the beach. The best of the ore taken out had been sacked for later shipment. This selected ore runs high in gold.

From the Queen Charlotte News it has been learned that there arrived recently in Queen Charlotte city from Vancouver Mr. A. Jones and party, who proceeded thence to Tasso harbor to do development work on the Tasso Copper Syndicate's group of mineral claims. Continuing, the News said that equipment and supplies weighing about eight tons were taken to the property, of which Mr. R. R. Hedley, a Vancouver operator and mining engineer, is the head. Work will be pushed forward on this promising property as rapidly as

possible, and in about a month's time, as soon as plans and surveys shall have been completed, an aerial tramway may be built and bunkers installed, to facilitate the shipment of ore.

Texada Island.

A meeting of the debenture holders of the Van Anda Copper and Gold Co., Ltd., was called for August 30, in Vancouver, for the purpose of considering and if thought fit, authorizing a proposed agreement for sale of certain of the company's properties to the Granby Consolidated Mining, Smelting, and Power Co., Ltd.

On August 7 the Vancouver Daily Province published the following news: "Mr. Knox Walkem of the firm of Burns & Walkem, has just returned from Van Anda and reports a very remarkable gold strike made by Messrs. John McConville and Jack Danaher of this city.

"The strike has been made upon an old claim known as the Nutcracker, situated about three miles from Van Anda. This claim was formerly worked and about \$14,000 worth of gold taken out of a small shaft. The work was abandoned owing to the death of the owner, and in some way the claim was allowed to lapse and was recently restaked by the present owners.

"Messrs. Danaher and McConville have been stripping the vein for some distance and have struck rich value, the ore in some places running as high as \$4 to \$5 to the pound of ore. The find has caused tremendous excitement at Van Anda and the mine is being visited daily by dozens of miners."

PROGRESS AT PORTLAND CANAL.

The Portland Canal Miner of the 9th inst. says:

Though no official announcement was forthcoming as the result of the recent visit of President A. Erskine Smith, of the Red Cliff Mining Co., Ltd., it was gathered by the Miner that plans were being matured for a resumption of development at the big copper-gold mine. It is known that the property underwent a thorough sampling by J. T. Hillis, who in recent months has secured a large interest in the shares of the company, and who is now believed to be behind a scheme for the reconstruction, financially, of the company. Mr. Hillis expressed genuine satisfaction after inspecting the mine and was particularly pleased over the immense outcrops contained within the boundaries of the company's holdings. Both Captain Anderson and A. Edward Tulk, who are shareholders in the enterprise, returned to Vancouver highly satisfied with their trip of inspection.

Portland Tunnels.—The big tunnel has now passed the 1,700 foot mark and the work is being steadily pressed toward its final stage, the 2,000 foot mark. An average of slightly over 50 feet per week is still being maintained.

Red Reef.—T. Prist is here from Victoria, on behalf of the owner, H. E.

Newton, to supervise the work being done by contract in extending the main tunnel to a distance of 300 feet, when a crosscut back through the ore body is also to be driven.

Indian Mines.—On the arrival of J. Fred Ritchie, a heavy shareholder in the company, an announcement was made that the force at the property would be increased by several more miners and a resumption of development made on a considerably larger scale than heretofore. The property has recently been surveyed for Crown grant purposes.

SAW MANY PROPERTIES.

C. W. Frank, a mining engineer of Victoria, has returned south after spending two weeks in the district examining a number of properties, says the Portland Canal Miner of the 23rd inst.

He came here to make an examination on the Silver Tip group up the Salmon River, in which he is interested. He also took in the Red Cliff, the Red Top, the Cascade Falls, the Big Missouri and several other showings and was agreeably pleased with all he saw.

SURVEYING AT MAPLE BAY.

The Flewin holdings at Maple Bay, embracing a large area of mineral claims, are being surveyed by A. E. Wright, a member of the firm of Ritchie, Agnew & Co., provincial land surveyors of Prince Rupert, says the Portland Canal Miner of the 23rd inst. Walter Flewin is accompanying the party, who have taken the launch Lakanian. They will be here sometime next week before returning to Prince Rupert.

IS PLEASED WITH STEWART.

Frank I. Clarke, secretary of the bureau of Provincial Information, and his wife were visitors here last Thursday, and Mr. Clarke took the opportunity during the period the Prince George was in port to take in the townsite, the beauties of which he had heard so much of in Victoria, says the Portland Canal Miner of the 23rd inst. He expressed himself as surprised at the splendid growth of vegetables to be seen in numerous gardens and greatly admired the efforts made to beautify the town by the cultivation of the vacant lots and the display of flowers seen everywhere.

FINISHING UP PACK TRAIL.

W. W. Rush and his partner are completing the pack trail from the government trail up Glacier creek to the property of the Rush-Portland Mining Company, says the Portland Canal Miner of the 23rd inst. It is expected with the better facilities now offered by the pack trail that a consignment of high grade ore will be sent out this fall.

The Dominion Powder Company is building a powder factory at Abbotsford.

THE COAL SITUATION ON VANCOUVER ISLAND.

British Columbia.

A serious crisis was reached in August in connection with the strike of coal-miners on Vancouver island. The coal-mining companies having persisted in refusing to recognize the United Mine Workers of America and those whose mines had been idle since the end of last April having commenced to operate in a small way with non-union men, much violence was resorted to by hundreds of men incensed at the action of the operators and the strike-breakers they were employing.

The Canadian Collieries (Dunsmuir), Limited, had ever since last September been gradually increasing its force of non-union men at its Comox (Cumberland) mines until the production of coal was approaching that made before the Union men struck in that month. Meanwhile the mines of its Extension colliery, farther south on the island, had until recently remained closed until the summer. There, too, operations were gradually being extended. Under these circumstances, and seemingly to so inconvenience the public by cutting short the supply of coal (much of which for the cities of Victoria and Vancouver is obtained from Nanaimo district mines), as to compel pressure to be brought on the companies to make terms with the Union, the U. M. W. of A. called a strike at all coal mines on Vancouver island. Although that organization then had but a comparatively small membership—less, it was stated, than 25 per cent. of the total number of men working at mines at and around Nanaimo—so great is the fear of miners generally of being black-listed as "scabs," as was threatened, nearly all of them ceased work at the call of the U. M. W. of A., and this notwithstanding that those working for the Western Fuel Co., which employs more than two-thirds of the men affected by the demand for a suspension of work, were under an agreement that had until September to run before expiry.

On August 11 the strikers commenced to use violence to those who, by working at the mines, were enabling the operators to begin to resume the production of coal. The local police being too few to deal with the situation, the Government of the Province, in response for appeals for more police protection, sent in a number of special constables engaged for the purpose. This so angered the strikers that they became very violent, going in large numbers to some of the mines and attacking all non-union men they could find, wrecking and burning mine buildings and plant, and terrorizing the country. The special constables already sent in were hustled on to a passenger steamer or train and threatened with death if they returned; miners' cottages were wrecked and set fire to; men, women, and children had to flee for their lives to the woods, and generally there was mob rule throughout Nanaimo coal-mining district.

When the seriousness of the situation was recognized by the Provincial Government, the Militia was called out in both Victoria and Vancouver, and after having been fully equipped for the most extreme measures, if such were found necessary, hurried to Nanaimo and

neighboring towns with such expedition that the lawless mobs found soldiers at hand and beginning their work before many of those who had been engaged in wrecking and looting were aware that troops had been sent for.

So far only one death has been reported—that of a man named Baxter, an outsider who was foolish enough to venture into the line of fire when strikers and non-union men they had compelled to take refuge in mine workings were exchanging shots. One extremely bad outrage is reported from Ladysmith, in connection with which it is charged that strikers threw dynamite into a bedroom in which were sleeping several children of a non-union man who, to save the children's lives, so the local newspapers report, picked up the dynamite and tried to throw it out of the house, but it exploded in his hands, shattering one of his arms and mangling his body so much that it was not thought possible he could live many days.

Union men state that the worst deeds of violence were done by outsiders who lately came to the district, but this has yet to be shown. As soon as the troops got matters well in hand and the violence had ceased, preparations were made to arrest numerous ringleaders on various charges. The strikers have gained one small advantage, for one company which, according to last year's official report of the Provincial Minister of Mines employed 187 out of a total of about 4000 working at Vancouver island coal mines, has recognized the U. M. W. of A. and granted some of the demands of its officials. However, the two companies—the Western Fuel Co., which in 1912 employed 1459 men, and the Canadian Collieries, with a total of more than 2000 men—most positively assert that they will have nothing at all to do with that Union, though the former is ready to treat with representatives of the men who were actually in its employ when the trouble came on three or four months ago. The Canadian Collieries has practically filled the places of the strikers, so will not listen to any suggestion of negotiation with U. M. W. of A. The Provincial Government has announced its determination to keep order at all costs.

Alex Robinson has taken a bond on the Sally mine at Beaverdell for Victoria parties.

BRITANNIA CO. HAS NOT COMPROMISED.

(By E. Jacobs.)

The following paragraph was published recently in the Vancouver Daily Province: "Compromise has been successful in ending the strike at Britannia mines, Howe sound, which has been in progress since February last, and which affected some 600 men. As a result of negotiations, which have been extended over some weeks, notice is given that at a meeting of the local members of Britannia Miners' Union, held on August 27, the strike has been declared off. Notice of this action has been sent to all parties interested."

Writing to the same newspaper, Mr. J. W. D. Moodie, vice-president and general manager of the Britannia Mining and Smelting Co., says: "There has appeared in the various newspapers published in Vancouver a notice that the strike at Britannia mines had been declared off, a compromise having been arranged with the company. So far as this company is concerned we desire to state that no compromise of the strike has been arranged by or on behalf of the company, and so far as the company is concerned the conditions are the same as they were in February of this year."

The following summary of matters connected with the "strike at Britannia mines" may be of interest. The Britannia Co., for reasons it deemed sufficient, discharged a doctor who for some time previously had been on its payroll. The secretary of a Western Federation of Miners' Union, at Vancouver, demanded reinstatement of the doctor, which was refused by the company, and in consequence of the attitude of the Union, its officials were forthwith prohibited from going to the company's mines and concentrating works to collect dues and the holding of Union meetings on the company's property was strictly forbidden. Afterward an application by the secretary of the Union and another non-employee of the company was made to the Minister of Labor for Canada for a Board of Investigation under the Industrial Disputes Investigation Act. This was granted, but its decision of a majority of its members was a foregone conclusion, for one of the three members was appointed by the Union while another was a member of a firm of lawyers

that had acted for the discharged doctor and Union men in actions in the courts against the company. The Board's majority recommendation that the company allow Union meetings to be held on its property and access to the men by Union officials was not accepted by the company, and there was no law to enforce acceptance by either party of an investigation Board's recommendations, whatever they might be.

The Union reported insanitary conditions at the company's mining camp; the provincial official who investigated reported conditions in this respect as being good, in fact better than in most camps. The company voluntarily increased the pay of the men 25 cents a day, thereby bringing wages up to as high as those paid in any other copper camp in the province; provided for its men the best food obtainable; it established a new camp known as the "half way," for as many of its men as could use it until it should be practicable to abandon the upper camp altogether, and the bunkhouse accommodation in the new camp is better—in placing only two men in each bedroom—than at any other mine in the province employing many men; it built comfortable houses for married employees and charges low rental for same; it spent money in providing for the recreation of its employees, in sports grounds, reading-room, etc.; its hospital accommodation and staff—two resident doctors and a trained nurse, with a specialist at Vancouver retained for emergency cases—were more than ample for all ordinary requirements. It did not, however, permit the Miners' Union to dictate to it what it should or should not do.

Eventually, last February, the Union called a strike, which resulted in rather less than one-half of about 700 men then in the company's employ (that number including Orientals employed on surface improvements) stopping work. The 50 odd carpenters then working for the company refused to go out in sympathy with the Miners' Union. The men were told that the company did not wish any man to remain in its employ if he felt he ought to obey the call of the Union, but the warning was added that no man leaving at the call of the Union would ever again be employed by the company. Some of the men stated that they were assured by Union officials they would be back there at work in two or three

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weeks. Six months have passed and not a single one of them is back, nor is likely to be. Within six weeks of the strike being called the company was informing applicants for work that it was full-handed, and ever since it has had more men apply for work than it has had vacancies for. Britannia camp is entirely non-union now, and there is every reason to believe it will continue to be. The management emphatically denies that it has made any compromise with or concession to the Union, or that it has any intention of doing so. It will continue to pay good wages and provide good food and accommodation for men who will do a fair day's work in return.

As an evidence that the company's mining operations were not long seriously hampered by the Union in calling a strike, it may be mentioned that the output of ore for eight months of this year, to August 31, inclusive, was approximately 132,000 tons, which is 11,300 tons greater than the corresponding period of 1912. The action of the local Union of the Western Federation has deprived many men of permanent employment at the Britannia mines, and a few of those called out had been working on the property a long while—up to seven years in individual cases; now they are effectually barred from regaining employment there. Further, the Union has brought about, by withdrawing its members from the Britannia property, the establishment there, in a locality quite free from interference by pickets and other Union devices for worrying workers, of a strong non-union camp, and one that is likely to be there to stay.

HAZELTON DISTRICT MINING NEWS.

The Omineca Miner of the 16th inst. says:

A notable find of copper ore near Tatla lake has been reported by J. P. Thorkildson, who brought in excellent samples of bornite this week. He states that thirty claims have been staked and that a thirty-foot vein, nearly all min-

eral, has been uncovered. Vancouver and Owen Sound people are interested with him in a large group, besides which there are several claims staked by the Indians who first found the showing. The claims lie fifteen miles north of Tatla lake and four miles from the Driftwood river. The ore is reported to assay 25 per cent. in copper, \$10.60 in silver, and a little gold.

"We have had a splendid trip," said P. C. Gillis, who returned on Wednesday from a visit to the Rocher de Boule mountain. Mr. Gillis and Dr. J. R. E. Sievers, two Butte men who are heavily interested in the Rocher de Boule, spent several days on the hill, in company with Dan J. Williams, a well known Butte mining engineer. They visited their own property, the Ohio, Highland Boy and other groups, and were greatly pleased with the showings. "Best of all," Mr. Gillis said, "we found that we could not discount the statements which had been made as to the ore showings. The claims look much better than we expected." After expressing their appreciation of the manner in which they had been treated by everyone they met, and especially by Frank Brown, who guided them through the camp, Mr. Gillis said they would recommend the immediate resumption of development on a large scale on the Rocher de Boule. He expects that work will be under way before the snow flies.

H. C. Hankin and Tom Wallador left today to work on the Monarch and Skookum claims, on Hudson Bay mountain. These claims adjoin the native silver group bonded by Trethewey and Martin.

HIGH VALUE ON SILVER STANDARD ORE.

The Omineca Herald of the 8th inst. says:

Thirty thousand dollars and sixty-one cents was the returns from the Trail smelter for the first shipment of ten

cars of ore from the Silver Standard mine. Two hundred and eighty-two tons of ore went \$106.42 per ton.

This was by far the richest cargo ever hauled over the G.T.P. into Prince Rupert, and it is only the first of many train loads that will leave New Hazelton in the near future. It was the biggest shipment of ore that has yet been made from any of the northern mining camps and it was the richest shipment from any of the quartz camps. It proves the mineral resources of the New Hazelton camp.

One mine on Glen Mountain, four miles from New Hazelton, shipped ten cars of ore that returned over \$30,000. This ore was all taken from the one development shaft on No. 2 vein which is down 250 feet. There was practically no sorting of the ore before sacking.

The Silver Standard is owned by a private company who are developing the property for their own profit. There is no stock for sale to anyone. There was therefore no desire to boost the value of the ore. At that the smelter returns were greater than the members of the company anticipated and great enthusiasm has been aroused locally. The Silver Standard has proven that they have the goods.

Since the first shipment was made development work has been continued and the crosscut tunnel which was driven from the bottom of the shaft to tap the No. 3 vein at the 300 foot level was completed a short time ago. At the present time Manager Haskins is drifting into very choice concentrating ore and the size of the ore body is increasing every day. He has sent down a report, that they are in 40 feet and have a big lot of fine ore. He has also encountered what appears to be a new ore for that property which he thinks will increase the gold values, but before committing himself he sent a sample to the assayer. The Silver Standard has sprung surprises from the beginning and the highest hopes are held by everyone.

The Silver Standard is not the only high grade mine in the New Hazelton Camp. This is by no means a one mine camp. The Erie sent a carload to the smelter which went over \$100 and the Harris mines sent a carload which went over \$70. The latter mine has since broken into into a big rich shoot of ore and every foot of development work has shown an improvement in the property. With every mine that has been developed, the results have been exceptionally good. All have held their own as depth has been attained and there has not been a single blank. In fact the New Hazelton camp holds something of a record and it gives promise of beating all other records and developing into the richest quartz mining camp on the American continent.

On their claims located just above Chicken lake, Jennings Bros. have disclosed a fine showing of galena, says the Omineca Miner.

The machinery is working smoothly at the Richmond mine and the mine is being unwatered preparatory to the commencement of operations.

Not only has the Prince Rupert Exhibition

recognized the importance of the mineral industry of the north by giving more prizes, cups and larger awards than has ever been offered at a previous British Columbia exhibition, but

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to manufacturers and selling agencies of mining machinery to display their products.

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PERSONAL AND GENERAL

Movements and News
of Prominent Mining Men



Written for the B. C. Mining
Exchange by E. JACOBS

One of the prominent men who visited British Columbia this month was Dr. Adams, president of the International Geological Congress and leader of the C-1 excursion. Of him, the London Mining Journal's "Who's Who" says: Adams, Frank D., Ph.D., D.Sc., F.G.S., F.R.S., F.R.S. Can.; Dean of the Faculty of Applied Science and Logan Professor of Geology, McGill University, Montreal, Quebec, since 1894; born Montreal, 1859. Educated Montreal High School, McGill University, Yale University, Heidelberg University. On staff of Geological Survey of Canada, 1880; Lecturer in Geology at McGill University, 1889. Publications: Many papers dealing more especially with problems of metamorphism and the older crystalline rocks of the earth's crust, which have appeared in various scientific publications in Canada, England, and the United States; also "Researches on Experimental Geology." Dr. Adams, who during the two-year period to March, 1912, was president of The Canadian Mining Institute, is well and widely known throughout Canada and parts of the United States.

Another well known Canadian, also with the Congress excursionists, was Dr. H. M. Ami, who was a delegate of the Royal Society of Canada, Ottawa. He is on record in "Who's Who" as follows: Ami, Henry M. M.A., D.Sc., F.G.S.; F.G.S. Am.; F.G.S. Switzerland; F.G.S. Can.; Palaeontological Division, Geological Survey of Canada, Ottawa, since 1882; born Belle Riviere, near Montreal, 1858. Education, private tuition; Ottawa Public and Grammar Schools; McGill University, Redpath Exd. Macdonald Scholar and Dawson Prizeman. Faculty of Arts, B.A., 1882; M.A., 1885; D.Sc. (Queen's), 1892; D.Ss. (McGill), 1907. President Ottawa Field-Naturalists Club, 1899-1901. President Ottawa Valley Graduates Society of McGill University, 1902-03. Awarded the Bigsby Medal by Council of Geological Society of London, 1903. Five years in "A" Company. Governor-General's Foot Guards. Publications: "Resources of the Country Between Quebec and Winnipeg Along the Line of the National Transcontinental Railway," and other Government reports; numerous papers on graptolites, palaeozoic faunas of Eastern Canada; publications relating to the Palaeontology and Chronological Geology of Canada, issued in Canada, Great Britain and United States of America. Editor of The Ottawa Naturalist, 1895-1900.

Mr. John Ashworth, M.I.M.E., of Manchester, England, another of the Congress visitors, had been in British Columbia before this trip. He is vice-president of the Manchester Geological and Mining Society and of the I.M.E. When at Rossland recently he said to the Rossland Miner: "This province should become Greater Britain. You have everything here, and the country

needs people." He thinks there are tremendous possibilities in the mineral resources of Western Canada. This development, however, called for large capital. "Nothing short of ample capital should attempt to do anything. It is not only useless but positively harmful for companies of small capital to try to work a mine. Failure means disaster to the whole country as well as to the people directly concerned. Failures give the country a bad name, and there has been altogether too much of that sort of thing in the past. Mining development should be conservatively done to give the company itself and the country the stability it must have to ensure permanence."

Mr. C. J. Seymour Baker is again at Barkerville, having arrived there lately from London, England. He will continue his experiments in connection with the recovery of gold from black sand, and do more development in his gold-quartz claims in Cariboo district.

Dr. Alfred E. Barlow, F.R.S.C., McGill University, Montreal, Quebec, accompanied the Geological Congress excursionists to British Columbia. He is now filling the position of president of The Canadian Mining Institute for a second year. He has long been a most assiduous, unselfish, and aggressive member of the Institute, whether as an ordinary member, councillor, or vice-president, and as president retains his zeal and constant effort for the advancement of its best interests. He was born in Montreal. In the year 1883, he secured the degree of A.B. at McGill University; six years later he became an A.M.; and eleven years after that a Sc.O. Throughout the long period, 1883-1906, he was an officer of the Geological Survey of Canada. The notable geological work he has done, and the excellent monographs he has written, need not be mentioned in detail here. Suffice it to state that his brilliant field work in investigating the nickel-copper field of Sudbury district, Ontario, in particular, brought high reputation to both himself and the Survey, and his memoir on that subject is still a standard. In 1906 he resigned his position on the Survey to undertake important professional work for a European syndicate. Since that time he has been a free lance. While he occasionally lectures at McGill University, in attending to his professional engagements he has to do much traveling about the Dominion.

Mr. T. Walter Beam, of Denver Colorado, now resident at Hedley, in the vicinity of which the New York Syndicate No. 2 is doing some important exploratory work with diamond drills under his direction, was in Victoria late in August, with Mr. Gomer P. Jones, general superintendent for the Hedley Gold Mining Co.

Mr. A. J. Becker, of New Denver, formerly manager of the Lucky Jim zinc

mine, in Slocan district, made a trip to Winnipeg recently.

Mr. W. M. Bennett, manager of the McAllister and Mountain Con mines, Slocan, has returned to Sandon from a business visit to Spokane, Washington.

Mr. D. C. Botting, of Seattle, formerly inspector of coal mines for the State of Washington, accompanied Mr. Geo. Watkin Evans to the Matanuska coal field, Alaska, in connection with getting out coal for tests by United States navy ships.

Dr. R. W. Brock, M.A., F.R.S.C., of Ottawa, Director of the Geological Survey of Canada, is general secretary of the International Geological Congress, to which, in addition to his home representation, he was delegate of the Società di Naturalisti, Naples, Italy. He is well known in British Columbia, having done much geological work in various parts of the province prior to having been appointed Director of the Survey. When at Rossland with the C-2 excursion, of which he was in charge as leader, he expressed to the Miner the sentiments of the touring experts, and they were all complimentary to that locality. The view of the Flower Show there, Mr. Brock said, was a capital idea, and one that agreeably surprised visitors who were looking for nothing but ore from a town of the high altitude and character of Rossland. He spoke of how Sir Augustine Baker, one of the Irish geologists, had left his lunch to admire one particular variety of flower included in the display, which he had never seen in such a stage of perfection. "The arrangements in Rossland and the reception accorded the delegates have been the finest of any place visited," said Mr. Brock. "The geologists have been delighted with the geological formations of Rossland and the prevalence of metals in the rock." Mr. Brock was personally pleased with the mining situation in Rossland, and quoted several remarks by foreign members of the party, who were astonished at the richness of the ore in sight. While several were mainly interested in coal mining, and all considerably enjoyed their investigations of the Crow's Nest Pass coal areas, the majority wanted to find gold, silver, and lead, and they were consequently delighted with what they found in Rossland camp.

Dr. E. L. Bruce, who had been engaged for several months assisting Dr. Chas. W. Drysdale in his geological work in Rossland camp, has returned to Columbia University, New York, where he is an instructor in mineralogy.

Mr. Frederick K. Brunton, assistant superintendent of the British Columbia Copper Co.'s smelting works in Boundary district, has returned to Greenwood, after having attended the meeting of American Institute of Mining Engineers held lately at Butte, Montana.

Mr. James Buchanan, superintendent of the Consolidated Mining and Smelting Co.'s smelting works at Trail, has returned to that place from a visit to Scotland.

Dr. D. D. Cairnes, of the Geological Survey of Canada, was in Vancouver

toward the end of August, having come south from Yukon Territory to meet the International Geological Congress excursionists and accompany some of them on their trip to Alaska and Yukon. While in Vancouver he gave information concerning the Shushanna gold field, having quite lately been in the vicinity of the "discovery" claim of that field.

Concerning a trip to Ontario made lately by Mr. Lorne A. Campbell, M.L.A., of Rossland, general manager of the West Kootenay Power and Light Co., the Nelson Daily News said: "With the object of inspecting the plans for some of the machinery to be used in the construction of the new unit at the West Kootenay Power and Light Co.'s plant at Bonnington falls, which is to supply power for the Canadian Pacific Railway Co.'s Castlegar to Rossland line, which is to be electrified. Mr. Campbell was in Nelson en route to Milwaukee. The new unit, explained Mr. Campbell, will be of 9,000 h.p., and will increase the total capacity of the company at Bonnington to 29,000 h.p. Of this, 25,000 will be at the upper plant and 4,000 h.p. at the lower plant, it being the plant at the upper falls that is being enlarged."

Mr. C. F. Caldwell, manager for the company operating the Utica mine, about 18 miles from Kaslo, has returned from a visit to Wisconsin, U. S. A.

Mr. H. H. Claudet, formerly of Rossland, was in London recently, having gone there from Switzerland, where he had been putting in an Elmore oil concentration plant.

The Rossland Miner says of a former British Columbia mine superintendent: An old-timer, visiting Rossland this week, after an absence of 10 years, is Neil Cochrane, a mining man who is still interested in property here, especially in the South Belt. Mr. Cochrane is now superintendent of the Jumper Californian Gold Mines, Tuolumne county, California, which he declares to be a dividend-paying concern, and with which he has been connected for seven years. There never was a mining camp, Mr. Cochrane remarked, that did not have its ups and downs, and he was glad to find Rossland's prosperity returning. He left California for a month, to get away from the excessive heat, which had been up to 110 degrees.

Dr. A. P. Coleman, Professor of Geology at the University of Toronto, Toronto, Ontario, had the misfortune to fall and break a small bone in one of his legs when crossing a glacier near Field, to which place he had traveled from Ontario as a member of the Geological Congress C-1 excursion party. He was brought to Vancouver for surgical aid.

Mr. A. Copeland has returned to the Slokan district, and will do more work on his Colonial mining property near Cody.

Another of the Geological Congress visitors was Dr. R. A. Daly, Professor of Geology, Massachusetts Institute of Technology, Boston, who is a delegate of Harvard University, Cambridge, Massachusetts; the Museum of Com-

parative Zoology, Cambridge, and the Boston Society of Natural History. He is by no means a stranger in British Columbia, for he spent several field seasons in making geological investigations along the 49th parallel, when the delimitation of the boundary line between British Columbia and the State of Washington was in progress. Lately he has been engaged, for the Geological Survey of Canada, in work that is part of what is required for the development of a geological map and section, which is to extend along the main line of the Canadian Pacific railway from the Great Plains to the Pacific ocean. He is a Canadian, who ranks high among the leading geologists of the United States. He has contributed many very important papers on the geology of igneous rocks, and is regarded as a prominent authority on this subject.

Mr. M. S. Davys, of New Denver, Slokan lake, managing director for the Silverton Mines, Ltd., paid a short visit to Vancouver and Victoria at the end of August.

Writing on June 28 to a friend in Victoria, B. C., from Bendigo, State of Victoria, Australia, Mr. John Dean, formerly a resident of Rossland, said: "Just a few lines with postcards illustrative of mining in Bendigo. I am told that more than eighty million pounds sterling has been taken out of this camp in dividends, and they are still grinding out considerable gold. One of the interesting features is a mine with hoisting gear and other equipment in the heart of the city, less than 200 ft. from the postoffice and principal hotel with accommodation for 80 guests."

The Kaslo Kootenai printed the following: Mr. Ed. Dedolph, a former Kaslo resident, the owner of property here and a member of the staff of the Dominion Department of Mines, has been in town several days, having only recently arrived in the Kootenays from Montreal, in which city he has been engaged in department work since leaving Kaslo. Mr. Dedolph has been doing a great deal of research work, and as a result of experiments in the laboratory believes that there is a possibility that the problem of the reduction of zinc and mixed zinc-lead-silver ores by an electrical process that saves value where old processes lose, is solved. His present mission here is to try the plan out at the electric smelter put up at Fairview some years ago, where it is hoped that the success of the scheme from a commercial standpoint will be demonstrated. Mr. Dedolph is an enthusiastic admirer of the Kootenays, and particularly of Kaslo. People living here, he says, do not realize, as a whole, how well off or how fortunate they are and the possibilities that are about them.

Mr. Walter R. Dewdney, gold commissioner for Greenwood mining division, was married recently to Miss Ferguson, of Midway. Mr. and Mrs. Dewdney spent part of their honeymoon in the Coast cities.

Mr. A. L. Dean, who years ago was on the metallurgical staff at the Trail smelting works and went thence to

Tasmania, where he has since been metallurgist for the Mt. Lyell Mining and Railway Co., lately resigned from that position.

Mr. T. R. Drummond, formerly general manager for the Dominion Copper Co. at Boundary Falls and afterward with the Nipissing Co. at Cobalt, Ontario, recently resigned as mining superintendent for the Inspiration Con. Copper Co., Arizona, U. S. A.

Mr. Howard W. Dubois, managing director for the Quesnelle Hydraulic Gold Mining Co., was at Barkerville, Cariboo, lately.

Mr. Wm. Fernie, of Oak Bay, Vancouver island, has been on one of his periodical visits to the Kootenay country.

Mr. W. E. Finch, manager for the syndicate that is developing the Idaho-Alamo group of mines, in Slokan district, returned to New Denver early in August from a visit to his home in Spokane, Washington.

Mr. D. G. Forbes has been investigating mining conditions in Portland Canal division and Moresby island of the Queen Charlotte group, to report on same to the Provincial Department of Mines.

Mr. S. S. Fowler, general manager for the New Canadian Metal Co., operating the Bluebell lead mine and concentrating mill at Riodel, Kootenay lake, spoke for the mining industry of Kootenay district in the course of an interview at Nelson with the Hon. Louis Coderre, Minister of Mines for Canada. His arguments in favor of assistance to the zinc mining industry were effectively supported by Mr. Ernest Levy, manager of the Le Roi No. 2 mines at Rossland, and the Van-Roi mine, Slokan.

It has been announced that Mr. Geo. L. Fraser is to retire from the management of the coal property of the Columbia Coal and Coke Co., situated between Granite creek and Collins gulch, Tulameen.

Mr. J. D. Galloway, who has been appointed acting assistant to the Provincial Mineralogist, had charge of the exhibit of minerals sent to the Vancouver Exhibition from the Mineral Museum of the Department of Mines, Victoria.

Dr. W. L. Goodwin, F.R.S.C., Director of the School of Mining, Kingston, Ontario, was one of the International Geological Congress excursionists who visited Western Canada at the end of August. He was a delegate to the Congress of the Institution of Mining Engineers, London, England, as well as of the School of Mining over which he presides.

Mr. Lionel Hill, assistant to Mr. Ernest Levy, manager for the Le Roi No. 2, Ltd., has returned to Rossland from a visit to England, whence he went in the summer.

Mr. W. H. Holmes, of Granite creek, Similkameen, was a recent visitor to Hedley. The Gazette said of him: Mr. Holmes came to Granite creek in 1885; he took up the land on the Similkameen in the early nineties, which has ever since been known as Holmes' Flat, and

later went back to Granite creek, where he has since resided. He knew Hedley, or rather the location of Hedley, many years ago, but this is the first time he has been here since there were any houses in the place nearer than Pinto's cabins and the buildings at the missions a short distance below.

In its issue of August 16 the Ashcroft Journal said: "John Hopp, of Barkerville, was in Ashcroft this week. He called at the Journal office and paid his subscription, which goes to prove that the best men of the district appreciate our paper for what little it does contain. Mr. Hopp has large mining interests in Cariboo. He has been made famous lately by his connection with the recent dynamiting celebration, which was thrashed out to Mr. Hopp's satisfaction at the last Clinton assize." To those not informed concerning the "recent dynamiting celebration" mentioned, it may be explained that the manager of an English company that has been spending money on mining property in Cariboo was sentenced to three months' imprisonment for having dynamited one of Mr. Hopp's water ditches. Quite lately water gates on this ditch have been opened so as to interfere with the use of the water on one of Mr. Hopp's mining properties, so it seems as if another prosecution may have to be undertaken to prevent a continuance of indulgence in law-breaking propensities existing in the Barkerville district.

Mr. Reginald E. Hore, editor of the Canadian Mining Journal, Toronto, Ontario, was a member of the International Geological Congress Excursion C-2. He was formerly Instructor in Petrography in the Department of Geology, Michigan College of Mines, Houghton, Michigan, U. S. A., and is a well known writer for mining journals.

Mr. Henry Kehoe recently returned to Spokane from Nevada. He will be remembered as having for some time made Vancouver his headquarters when examining mining properties in the Coast district.

Mr. Rowland King has resigned from the laboratory staff at the British Columbia Copper Co.'s smelting works at Greenwood, Boundary district. It is stated that he will take a college course in mining engineering or metallurgy.

Mr. W. W. Leach, of the Geological Survey staff, who had been chosen as one of the guides for the C-2 Excursion of the Geological Congress in the Crow's Nest coal district, was taken ill with fever and so was unable to leave Ottawa to come West with the party.

Mr. Francis D. Little, of Victoria, has been at Hon. James Dunsmuir's Noble Five silver-lead mine, near Cody, Slokan, looking into the question of additional development work proposed to be done there.

The London Mining Journal said, in its issue of August 30: "Sir Richard McBride, K.C., K.C.M.G., the Premier of British Columbia, arrived in England on August 26 by the S.S. 'Mauretania' on a short visit, and is staying at the Savoy hotel."

Mr. James McEvoy, of Toronto, Ontario, who came West with the Inter-

national Geological Congress party in the capacity of associate leader of the C-2 Excursion, was taken ill with pneumonia when en route to the Coast, and on arrival in Vancouver had to go to the hospital for medical treatment and careful nursing. Later he was stated to be convalescent and intending to recuperate at Shawnigan lake, Vancouver island, before returning to Toronto. He was accompanied by Mrs. McEvoy.

Mr. John McLeish, of Ottawa, Chief of the Division of Mineral Resources and Statistics, Mines Branch of the Canada Department of Mines, was secretary to the Excursion C-1 of the International Geological Congress. He has, among other important official duties, the compilation and preparation for publication of the periodical reports on the mineral production of the Dominion. He accompanied the C-1 Excursion to Victoria and Vancouver, and thence to Edmonton, Alberta, before returning East. He had as assistant secretary, Mr. H. S. De Schmid, also of the Mines Branch staff.

Mr. W. W. Mein, of New York, consulting engineer of the Canadian Mining and Exploration Co., Ltd., was at Hedley, Similkameen, recently. He was accompanied by his assistant, Mr. Ralph S. G. Stokes, of San Francisco. They visited the Hedley Gold Mining Co.'s Nickel Plate mine and, as well, looked over the Kingston property, in the same camp.

Mr. John L. Retallack, of Kaslo, recently visited parts of Similkameen and Tulameen districts, in which he looked over a number of mineral claims.

Dr. Heinrich Ries, Professor of Geology, Cornell University, Ithaca, New York, who was one of the Geological Congress excursionists to the Coast, is the foremost authority on clays. He has made many valuable contributions to the knowledge of the clays of America. He has been engaged by the United States Geological Survey and by the State Surveys of Michigan, Maryland, New Jersey, Texas, Wisconsin, and Virginia, to report on clays. During recent years he has done similar work for the Geological Survey of Canada, and this year his field work is in the Boundary and Similkameen districts of this province.

Mr. Frank Robbins, now of Los Angeles, California, will be remembered by many mining men of the province as having years ago been manager of the North Star mine, Kimberley, East Kootenay, which was the first mine in that district to ship silver-lead ore. In a letter recently received by the Provincial Mineralogist, Mr. Robbins acknowledged receipt of the Annual Report of the Minister of Mines for 1912, and paid a warm tribute of appreciation of the value of the report to those who try to keep in touch with the development of the mining industry of the province.

Mr. Wm. Fleet Robertson, Provincial Mineralogist, accompanied the Geological Congress Excursion C-9 from Vancouver to Prince Rupert and thence to Hazelton and Moricetown.

Mr. Oscar Stromberg, who had been construction engineer at the Trail smelting works for about three years, lately

left the province for Colorado, to take a similar position in that state.

Mr. W. F. Teetzel, late Gold Commissioner for the Nelson mining division, has retired from the Provincial Government service and entered that of the Dominion Government. He is remaining in British Columbia.

Mr. J. B. Tyrrell, M.A., F.R.S.C., of Toronto, who accompanied the International Geological excursionists to the Coast, has taken a very prominent part in developing the mineral resources of Canada. He was educated at Weston High School, at Upper Canada College, and at the University of Toronto; B.A. 1880, M.A. 1889, and in the same year degree of B.Sc. from Victoria University. In 1881 he received a commission from the Government of Canada as a geologist on the staff of the Dominion Geological Survey. In 1883 he explored the Rocky Mountains north of the International Boundary. In 1884-86 he was in the Province of Alberta, and determined the course of the gold in Saskatchewan river and outlined the extent of many of the coal seams in the province. In 1887-89 he was exploring in Northwest Manitoba, and in 1890-91 was on and around Lake Winnipeg. In 1892 he was occupied in the previously unknown region southeast of Lake Athabasca, and outlined the geology of that part of the country for the first time. In 1893 he began the exploration of a great unknown region, of about 200,000 square miles in area, between the Mackenzie river and the west coast of Hudson bay, a large part of which is commonly known as the "Barren Grounds," and during that and the next following year he explored and mapped for the first time the Dubawnt and Kazan rivers, two rivers of the first magnitude, as well as numerous smaller streams. The characters of the rocks passed over during these two years were carefully studied, and incidentally observations were made on the glacial geology of the country explored which added greatly to the knowledge of conditions during the Glacial Period, and very largely revolutionized the Glacial Theory as held at that time. For these explorations he was awarded a diploma and the "Back" grant by the Royal Geographical Society, England. In 1895 he investigated the geology of country northeast of Lake Winnipeg and continued investigations into northwest of that lake, where, beside locating the occurrence of several bands of mineral-bearing Huronian rocks, he determined the existence of a large area of rich agricultural land, being the northern continuation of the glacial lake Agassiz. In 1897 he was engaged in the exploration of central and northern Manitoba, and determined the source of supply of the artesian water of the city of Winnipeg. In 1898 he began the investigation of the geology of the Klondike gold-fields and of other parts of Yukon Territory. He resigned from the Geological Survey and afterward—1899-1905—practised as mining engineer at Dawson, Yukon, reporting on many large properties and engaging in mining himself. In 1906 he removed to Toronto, where he has ever since practised as a consulting mining engineer. He has published in various journals and other

publications numerous papers on mining and scientific subjects.

Dr. Charles Doolittle Walcott, secretary of the Smithsonian Institution, Washington, D. C., ranks among the leading geologists of the world. He has made a special study of the oldest fossiliferous formations, and has written numerous volumes on the stratigraphy and palaeontology of the Paleozoic rocks. Dr. Walcott has done some very valuable work in British Columbia, studying the Cambrian in the Rocky mountains from which he has obtained remarkable fossils. After having been for several years on the staff of the United States Geological Survey, Dr. Walcott was in 1894 appointed Director of the Survey, which position he held until 1902, when he joined the Reclamation Service. In 1907 he was appointed secretary of the Smithsonian Institution.

Mr. Ernest Waterman, manager of the Princeton Coal and Land Co., was at the Coast lately, from Similkameen district.

Mr. Bruce White has returned to Kootenay from a prospecting trip to the Athabaska country in northeastern Alberta and northwestern Saskatchewan.

Dr. Alfred W. G. Wilson, of the Mines Branch, Canada Department of Mines, was a member of C-2 Excursion party of the Geological Congress to Victoria and Vancouver and then joined C-8 for the trip to Malaspina glacier and Dawson, Yukon. He is expected to remain in British Columbia some time after his return from the North, to obtain information relative to the zinc mining situation in the province.

Mr. James Wright, managing director of the Grand Trunk British Columbia Coal Co., Vancouver, during the month went to the company's property at Twenty-Mile, about 15 miles east of New Hazelton, Skeena district, to obtain some coal for a bulk test at the works of the Nanaimo Gas and Coke Co. About five tons was shipped, this having been the first lot of coal, other than samples, sent out of the district.

MINERS IN FIRST-AID COMPETITIONS.

Nanaimo was well represented at the St. John Ambulance First Aid competition and demonstration held at Victoria on August 9 in connection with the Victoria Carnival. The Western Fuel Company paid expenses of a number of its employees, the party including the competitors mentioned below and Mr. Thos. McGuckie, the company's general superintendent. Other competitors were supplied by Victoria City Police who, however, had a walkover for police first-aid competition, and by Number three troop Victoria Boy Scouts. Several Victorians also competed in men's civilian competitions. Fourteen ladies competed in their classes.

Before competitions commenced Alderman Cuthbert, president of the Carnival executive committee, made an appropriate address, in the course of which he commended Nanaimo miners,

among others, for taking so much interest in First Aid work, and expressed much appreciation of their attendance to assist in making the Carnival a success. There was a large attendance of public and competitors were frequently applauded. The Victoria Boy Scouts band rendered a number of instrumental selections. Major McTavish, Vancouver, President British Columbia Branch St. John Ambulance Association, and Major Moncrieff, Victoria, were the two judges. The following gives results where Nanaimo men competed:

Miners' competition required competitors to run 100 yards to scene of accident, attend to injured, place him on stretcher, carry him back to judge and answer questions on the case. Two Nanaimo teams first consisted of (1) J. W. Jemson, G. B. Bradshaw, Wm. Neave and Charles Barsby, and (2) of R. B. Fulton, Matthew Gunniss, Thos. Pearson and R. W. Morton. The first-named team won the silver cup, and all eight competitors received medals. Four Nanaimo men competed in the Civilians' First Aid. Out of five teams of two men each, Adam McNeill and John Hamilton were second, and Wm. Brough and Isaac Carruthers third. The same four men won the other Civilians' competition, receiving a cup and four medals. The Brechin team, Jemson, Bradshaw, Neave, and Barsby, were second in the Grand Open competition, Victoria City Police being first and winning cup. Three Nanaimo teams competed in that event. Matthew Gunniss won the Victoria Cross race in which fourteen competed; this competition required competitor to run 100 yards, attend injured man, and carry him back to judge at starting point. In mixed competition, each team consisting of two ladies and two men, Miss Bannister, Miss Whittier, Robert Fulton and Chas. Barsby were first, beating four other teams. Altogether the miners from Nanaimo made a most creditable showing.

SENDS ORE TO EXHIBITION.

E. F. Voigt sent the following ore samples to the Vancouver exhibition all being chalcoprytic and heavily charged with hematite iron: Automatic—largest known ore body in Voigt camp, average values copper, 2½ per cent., gold \$3.50. No. 37—large ore body, well exposed, average assay, copper 4 per cent., gold \$5.50. No. 18—700 feet of tunnels, extensive ore body, copper 8 per cent., gold \$4.50. No. 14—This high grade claim runs an average of copper 9 per cent., gold \$11.50 and has 300,000 tons of ore blocked out.—Similkameen Star.

The B. C. Copper Co. has decided to put in at the old smelter at Boundary Falls a concentrating plant with which to reduce the percentage of silica in ore from its Lone Star and Washington mine, and so make a product more suitable for smelting with ores from its other mines in the district.

The Jewel mine and mill, of Long lake, are again in operation. A force of 40 men is employed and about fifty tons of ore being treated daily.

CONSISTENT AT ANY RATE.

The Toronto Globe announces that it "stands today where it stood in 1911." In 1911 the Globe was in wrong.—Ottawa Journal.



NOTICE OF CANCELLATION OF RESERVE

NOTICE IS HEREBY GIVEN that the reserve existing on lands embraced in Township 24, Rupert District, notice of which, bearing date June 12, 1912, was published in The B. C. Gazette on June 13, 1912, be cancelled to permit of the pre-emption of said lands under the provisions of Section 10 of the "Land Act" on and after 9 o'clock in the forenoon of Friday, October 17, 1913; all such pre-emption entries to be made in accordance with existing surveys varying in area with a maximum of 40, 80 or 160 acres to each pre-emption, as the said lands may be subdivided by a survey.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B. C.
9th July, 1913.

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CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve covering lands formerly held under expired Timber Licences Nos. 39195 and 38196, situated in the vicinity of Powell Lake, New Westminster District, is cancelled, and that said lands will be open for entry by pre-emption on Monday, the 3rd day of November, 1913, at the hour of 9 o'clock in the forenoon.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B. C.

aug. 2

nov. 1



NOTICE OF CANCELLATION OF RESERVE.

NOTICE is hereby given that a reserve covering certain lands situated in the vicinity of North Thompson River, Kamloops District, formerly held under expired Timber Licences Nos. 11267 and 13758, notice of which appeared in the B. C. Gazette on the 27th of December, 1907, is hereby cancelled and said lands will be opened to entry by pre-emption on Monday, the 8th day of December, 1913, at 9 o'clock in the forenoon; application to be made to the Government Agent at Kamloops, B. C.

ROBT. A. RENWICK,
Deputy Minister of Lands.

Lands Department,
Victoria, B. C.,
27th August, 1913.

aug. 30

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NOTICE OF CANCELLATION OF RESERVE.

Notice is hereby given that a reserve, the notice of which appeared in the B. C. Gazette of December 27th, 1907, is cancelled, in so far as it relates to lands formerly held under Special Timber Licences Nos. 32710, 38000, 40345, 10419, 40346, 40127, 31332, 11693, 40347, 40349, 40129, and 33317, all in Kamloops Land District, and the said lands will be open to entry by pre-emption at the hour of 9 o'clock in the forenoon on Friday, October 17th, 1913.

ROBERT A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B. C.,
15th July, 1913.



NOTICE OF CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under expired Timber Licence, No. 37459, notice of which appeared in the B. C. Gazette on the 27th of December, 1907, is cancelled.

The said lands situated on Lasqueti Island, and covering portions of Sections 11, 12, 14 and 15, will be open to pre-emption entry at 9 o'clock in the forenoon on Monday, October 20, 1913; all applications to be made for legal subdivisions of said Sections 11, 12, 14 and 15, Lasqueti Islands, which are within the boundaries of lands formerly covered by said licence.

R. A. RENWICK,
Deputy Minister of Lands.

Lands Department, Victoria, B. C.,
12th July, 1913.



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under expired Timber Licences Nos. 39195 and 38196, situated in the vicinity of Powell Lake, New Westminster District, is cancelled, and that said lands will be open for entry by pre-emption on Monday, the 3rd day of November, 1913, at the hour of 9 o'clock in the forenoon.

R. A. RENWICK,
Deputy Minister of Lands.

Lands Department, Victoria, B. C.,
30th July, 1913.



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under Timber License No. 31020, now expired, situated at Pender Harbor, notice of which appeared in the British Columbia Gazette on the 27th of December, 1907, is cancelled, and that said lands will be open to entry by pre-emption at 9 a.m. on Monday, the 25th day of August, 1913.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B.C., 17th May, 1913.



NOTICE OF REMOVAL OF PROVINCIAL ASSESSOR AND COLLECTOR'S OFFICE.

Notice is hereby given that, on and after June 5, 1913, the Provincial Assessor and Collector's Office, Parliament Buildings, will be removed to the Belmont House, rooms 116, 117, 118, corner of Government and Humboldt Streets, Victoria, B. C.

All assessed taxes on real property, personal property and income, including the taxes due by corporations and others under the "Taxation Act," also all rural school taxes under the "Public Schools Act," for the Victoria assessment district, will, therefore, be payable in future at the above-named offices.

Taxpayers are reminded that in order to obtain the discount of 10 per cent. on the current year's taxes payment must be made to the Collector at the above address on or before the 30th day of June, 1913.

All communications respecting taxes may be addressed to the undersigned, Postoffice Drawer 1597, or to the above address.

E. E. LEASON,

Provincial Assessor and Collector,

Victoria Assessment District.

Dated at Victoria, B. C., June 2, 1913.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve, notice of which appeared in the B. C. Gazette on the 27th of December, 1907, is cancelled in so far as it relates to lands formerly covered by Timber Licence No. 41206, known as Lot 456, Sayward District, and same will be opened to entry by pre-emption on Monday, the first day of December, 1913, at the hour of 9 o'clock in the forenoon.

The lands in question will shortly be subdivided into suitable parcels for pre-emption, and all applications must be made in accordance with such subdivision, particulars of which will be available at the office of the Government Agent, in Vancouver, to whom applications must be submitted.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B. C.,
12th August, 1913.

aug. 16

nov. 15

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Address

The Canadian Copper Company
Copper Cliff, Ontario.

Work has been resumed on the Argo tunnel, at Greenwood, where operations on a bore have been in progress, except for a short interval, for about three years.

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PROGRESS ON GROUNDHOG TRAIL.

The Portland Canal Miner of the 16th inst. says:—

"You can state positively that there will be no delay in completing the building of the proposed Stewart-Groundhog pack trail, so that by next spring it will be possible to use the new route to the coal fields," was the welcome announcement made to The Miner by Road Superintendent C. J. Gillingham, who returned home this week after an absence of six weeks spent between Meziadin lake and the government telegraph line locating the main trail and in the construction of 25 miles of new trail from a point near Cabin Six into the northern part of the big anthracite coal basin. Accompanying Mr. Gillingham were George Thomas, Lester Rutherford and Robert Quinn. Gaunt and lean, the quartette show physical signs of their hard travel, but all are happy to be back in Stewart and have stories to tell of adventure and hardship such as comes to the lot of the pioneer trail-blazer. The road superintendent denies emphatically that at any time they were absolutely without food, but their rations were pretty low on their arriving at the government telegraph cabin.

The party left Stewart, headed for the coal fields, on June 28th, and after sixteen days of arduous travel reached the telegraph line between Cabins Six and Seven. They then augmented Phil. McDonald's party in the construction of 25 miles of new trail, starting on the telegraph line at the bridge near Cabin Six, into the coal area, and came out over the trail to Hazelton. Mr. Gillingham says that the route from Stewart will be up the Hanna river to the east fork of the Naas river, thence following that stream to the bridge near Cabin Six. He states that practically no elevations of importance are to be overcome after passing the Bear river divide, and that the route finally selected will not only be more direct but have the advantage of an abundance of feed for pack horses.

OMINECA PLACER CLAIMS SOLD.

The Omineca Miner of the 9th inst. says:

After an examination of the Monroe and Harrison holdings on Quartz Creek, in the Omineca river placer district, the Omineca Gold Mines, Ltd., of Vancouver, has purchased the property at a handsome price. F. E. Großman, a member of the company, arrived from the

INDEX

Subject:—	Page
Visit of International Geologists....	5
Provincial Mining News.....	10
Shushanna Gold Field.....	16
Hedley Gold Mining Co.'s Mines....	16
Mammoth Blast at Mother Lode Mine	17
Gold Mining in Lillooet District....	18
Aufecas Ledge 17 Feet and Wall Not Reached	19
Supplementary Report from Directors of Aufecas Gold Mines, Ltd.....	19
Mining at Twenty-three Mile.....	19
Editorial	20
Latest Metal Markets.....	21
Coast and Island Mining—	
Vancouver Mining Division.....	22
Progress at Portland Canal.....	23
The Coal Situation on Vancouver Island	23
Britannia Co. Has Not Com-promised	24
Hazelton District Mining News.....	25
High Values on Silver Standard Ore.	25
Personal and General.....	26
Miners' First-Aid Competition.....	29
Progress on Groundhog Trail.....	31
Omineca Placer Claims Sold.....	31
Convention of American Mining Congress at Philadelphia	33
Mining Industry at Panama-Pacific Exposition	34
Coal Dust Explosion Tests.....	36
Pre-emptors' Laws in B. C.....	37

camp on Monday, accompanied by Charlie Monroe, and the deal was consummated on Wednesday. Mr. Großman, who is on his way to Vancouver, on a brief business visit, is much pleased with his inspection of the company's properties on Quartz and Vital creeks. R. D. Featherstonhaugh, the company's engineer, remains on the ground, with a crew of six men, engaged in preliminary development work. It is the intention of the directors, who are developing the property with their own money, to continue working on a businesslike basis, and they have every confidence in the future of their property. The new road from Tatla lake, on which H. E. Bodine is now engaged, will enable the company to take in the necessary plant for the mining of their extensive holdings. The first 4½ miles of road have been cut and over the remaining distance, which is through favorable country, good progress will be made.

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LISTED STOCKS.

Spokane.	Bid.	Asked.
Ajax08½	.17
Alameda00½	.01
Alhambra04½	.10
Ambergris .....	.05	.07½
Am. Comd'r .....	.00½	.01½
B. C. Copper	4.25	4.50
Black Horse .....	.01½	.02½
Bullion .....	.01	.02
Bullwhack .....	.48	.52
Caledonia .....	.23½	.26
Canadian Cons.	45.00	75.00
Carbonate Hill .....	.01½	.04
Copper King .....	.02½	.02½
Copper King (Che.) .....	.43.00	51.00
Federal, pref. .....	.16.00	23.00
Federal, com. .....	.05	.06½
Gertie .....	.68.00	70.00
Granny Smelter .....	.01	...
Happy Day	2.20	...
Hecla .....	.07½	.09½
H. E. M. .....	.02½	.02½
Hypothek .....	.01½	...
Idaho Giant .....	.02	.02½
Idora Hill .....	.37	.41
International C. & C. .....	.07½	.09
Jack Walte .....	.01	.03
Laclede .....	.01½	.02½
Lucky Calumet .....	.13½	.17
Lucky Jim .....	.22½	.26½
Marsh .....	.15	.18½
McGillivray C. & C. .....	.02	.02½
Missoula Copper .....	.01½	.02½
Monitor .....	.04½	...
Moonlight .....	.01½	.38
Nabob .....	.01	.03
Nugget Gold Mines .....	.13½	.19
Oom Paul .....	.85½	.90
Puritan .....	.04	.05½
Rambler-Cariboo .....	.02½	.05½
Rambler Cariboo Ext. .....	.01½	.02½
Silver Cable .....	.39	.45
Snowshoe	1.35	1.47
Snowstorm .....	.03½	.04
Standard S. L.	1.92	1.97
Stanley	1.25	...
Stewart .....	.60	1.00
Tamarack Con. .....	.16	.19½
United Copper .....	...	...
Utica .....	...	...

Industrials

	Bid.	Asked.
Wash. Water Power Co. ..	133.00	136.50
Western Union Life ..	135.00	145.00
Interstate Con. Tel. ..	20.00	...
Tamarack and Custer ..	1.01	1.26

Cobalt Stocks

	Asked.	Bid.
Balley .....	.09½	.09½
Beaver Consolidated ..	.40½	.39½
Buffalo	2.30	2.10
Chambers-Ferland .....	.29	.28½
Great Northern .....	.09	.09½
City of Cobalt .....	.39	.38½
Conlagas	9.25	9.10
Crown Reserve	3.65	2.58
Foster .....	.11	.09½
Gnfford .....	.06½	.06
Gould .....	.03½	.03½
Green Meehan .....	.01½	.01½
Hargrave .....	.08½	.08
Mc Kin. Dar. Savage ..	1.98	1.97
Nipissing	9.15	9.00
Ophir .....	...	.04
Otis .....	.02	.01½
Peterson Lake .....	.25½	.25½
Rochester .....	.04½	.04
Right of Way .....	.08½	.08
Silver Leaf .....	.04½	.04
Temiskaming .....	.34	.33½
Trethewey .....	.34	.32½
Wettlauffer .....	.15	.15

Porcupine

	Asked	Bid
Crown Charter .....	.00½	.00½
Dome Extension .....	.06½	.06
Foley O'Brien .....	...	.16
Hollinger	15.50	15.15
Jupiter .....	.37	.36
North Dome .....	.60	...
Pearl Lake .....	.30	.29½
Porc. Imperial .....	.02½	.02
Preston East D.04	.03½
Rea Mines15
Swastika10	.09½
Vipond20	.19½

Sundry

C. G. F. S.05	.04½
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Closing quotations, Sept. 19:

Listed Stocks.

	Bid.	Asked.
Dominion Trust Co.	126.00	106.00
Great West Per. A.	27	.35
International C. & C.	11.00	...
Vancouver Development ..	...	.30
Nugget Gold Mines .....	...	.03½
Portland Canal .....	...	...

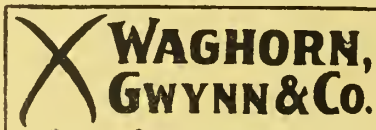
Unlisted Stocks.

B. C. Copper ..	2.25	...
B. C. Per. Loan, A. ....	...	130.00
B. C. Trust Co.	102.00	...
Northern Crown Bank ..	...	96.00
National Finance .....	...	103.00
Pacific Coast Fire .....	...	120.00
Pacific Loan Co.	23.00	...
Prudential Invest. Co. ....	...	103.00
Canada Cons'd, M. & S.	72.00	...
American-Canadian Oil ..	...	.04½
Amalgamated Dev. ....	.00½	.00½
B. C. Refining Co. ....	...	...
Can. Pac. Oil of B. C. ....	.02½	...
Coronation Gold .....	...	.95
Glacier Creek .....	...	.05
Hudson Bay Fire .....	...	106.00
Lucky Jim Mine .....	...	.05½
McGillivray Coal .....	.13	...
Nicola Valley C. & C. ....	...	15.00
Stewart Land .....	...	7.00
Red Cliff Min. Co. ....	...	.08
Western Union Fire .....	...	50.00

A. Allen, R. H. Schultz and E. Ehenburg, representing Spokane mining capital, arrived Tuesday and left for Tulameen and Leadville. They were accompanied by R. Stevenson who will show them various mineral properties in the above sections.—Similkameen Star.

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A copy of the constitution and by-laws of the Association will be sent to every old public school boy who is not already a member thereof.

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Old members who have not done so are requested to notify the Secretary of any change of address.

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CONVENTION OF AMERICAN MINING CONGRESS TO TAKE PLACE AT PHILADELPHIA IN OCTOBER.

Manufacturers of mining machinery, rescue and first aid apparatus and safety appliances are to be given an opportunity to display their wares before the mining men of the country at a great industrial exposition, to be held under the auspices of the American Mining Congress, in Philadelphia, Pa., the week of October 20th.

This exposition, the first of its kind in this country, will be held in conjunction with the annual convention of the Mining Congress, and the double attraction is expected to attract thousands of interested men. It will be entirely national in scope, the metal mining interests of the West to be as fully represented as the coal mining of the East. In fact, there is a tentative plan to have a gold mining camp in full operation with a mill crushing the ore. Horticultural Hall, the biggest place of its kind in Philadelphia, situated in the heart of the city, has been engaged for the occasion.

While the plans are still in embryo, a number of the leading manufacturers have already been approached, and have shown sufficient enthusiasm to lead to the belief that all of the space will be taken in a short time, and that there may not be enough to take care of all who apply.

A number of the big coal companies that have developed the "Safety First" movement at their mines, are now negotiating for large amounts of space to show the mining men and the public what they are doing in behalf of their men. These companies will send rescue and first aid crews, and there is talk of exhibition drills between the various crews. The United States Bureau of Mines will be represented by one of its safety cars and a picked crew of helmet men. The State of Illinois and a number of big anthracite companies may send rescue cars for exhibition purposes.

"This exposition will not only be of untold value to the mining men of the country," said James F. Callbreath, secretary of the Congress, "but it will also show the magnitude of the industry to the entire country. We know that it is a gigantic industry, second only to agriculture, employing directly more than a million and a half men, and with a yearly output of two billion dollars, but the public has never given it the recognition it deserves. The convention, which will be held at the same time as the exposition, will be the most important body of mining men ever gathered together. The industry has been making great strides in the last few years, and a number of problems have arisen that are to be discussed straight from the shoulder."

gathered together. The industry has been making great strides in the last few years, and a number of problems have arisen that are to be discussed straight from the shoulder."

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Although the convention is to be held in the East, it will not be an Eastern affair, for the most troublesome topics are coming from the West and Western mining men are coming, many of them in special trains, to discuss these questions as affecting the entire industry.

The convention is to be the first get-together affair of all the mining interests of the country, and an attempt is to be made to show the need of a stronger national organization that will represent all phases of the industry and lead to the placing of the industry in the important place it belongs. Perhaps the leading topic of the convention will be the new system of mine taxation recently put in operation in some states and being discussed in others at the present time. The West can unite with the East upon this proposition, for Colorado and Arizona have new taxation laws for the mines, and so have Pennsylvania and Michigan. Colorado mining men are claiming that they are doubly taxed and that their industry will suffer. Arizona is making similar claims, and it is understood that Michigan is very much dissatisfied. An increase in the price of Pennsylvania coal is threatened by reason of the new tax law in that state.

It is expected that the West will be insistent upon a definite policy toward Alaska from Congress, and there will be a demand for quick action. The West promises to be so ably represented in this that the active aid of the Eastern mining men will be obtained.

The smelter fume problem, which also belongs to the West, will be discussed dispassionately, with the hope that an amicable adjustment may be reached soon. California has, at the present time, two commissions delving into this problem, and Montana one. Western men say that the problem should be attacked with more vigor and settled.

The disposal of debris from placer mining is another question that will be talked by Western men. They will declare that the placer mining industry of California has been nearly wiped out through drastic rules and regulations, some of them imposed by the United States Government. At the present time the debris question is in charge of a commission of the United States army engineers, and it is claimed that while they zealously watch the interests of the farmers, they know nothing about the mining problem. A demand may be made for the inclusion of a mining engineer on this board to see that the interests of the mines are protected.

The coal men of the East will be mostly interested in two problems, the "Safety First" movement and the conservation of the coal lands adjacent to the great Eastern industrial centers. This latter, it is said, has become a question of most serious moment. It is fully realized by the Eastern men that their coal fields are being used up at a tremendous rate, and when these coals are gone, it will be useless to think of getting coal from the West, for the commercial prosperity of the East depends upon a supply of coal at reasonable price and transportation

charges from the West would be too great.

The proposed system of leasing mineral lands will also come up for extended discussion. The fact that the Federal Government some time ago leased coal lands in Wyoming to a coal company, thus making the entering wedge in this system of disposing of the Government's mineral lands, will undoubtedly call for considerable comment. Then there is the proposal for the revision of all the mining laws of the country. A great many mining men are of the opinion that the laws are antiquated and cumbersome, imposing hardship upon every one who has to deal with them.

Altogether, the exposition and the convention promise to bring together the greatest gathering of mining men in the country, and much good is expected from its deliberations.

THE MINING INDUSTRY AT THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION.

In view of the fact that the mining industry has contributed more than forty billion dollars to the wealth of the United States during the last quarter of a century, it is not surprising that it is planned to make an impressive display of this industry at the Panama-Pacific International Exposition, to be held in San Francisco in 1915.

This exposition is to be by no means a local or sectional affair, but a distinctly international event, in celebration of the completion of the Panama Canal, and will mark a new epoch in the commerce of the world, an epoch that will be noted for readjustment of trade routes and enormous expansion of American export trade.

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Charles E. van Barneveld, chief of the Exposition's Department of Mines and Metallurgy, is making every effort to gather under the roof of the great palace that will house the mining and metallurgic display, a collection of object lessons that will show the mineral resources of every country and the methods of extracting them from the earth. The display will be a liberal education in the science of mining.

"It has been said that mining operations do not lend themselves readily to exhibition," said Chief van Barneveld recently, when questioned as to the difficulties that might be expected in his undertaking, "and that the legitimate mine operator has little commercial incentive to exhibit because he has nothing to advertise, nothing to sell. Fortunately, the mining industry in the main is in the hands of public-spirited men, accustomed to taking a large view of things, men who will not allow the lack of commercial incentive, the lack of apparent direct individual benefit, to outweigh the decided indirect collective benefits to be derived from the

right sort of publicity. We hear much of the decadence of prospecting and minings, of the lack of security and stability of mining investments. The miner has suffered greatly from misunderstanding, from public ignorance, and, above all, from persistent misrepresentation. We all recognize, in a general way, the importance of education; it is the greatest remedy for prejudice, superstition and ignorance; it makes for greater all-round efficiency. A well-planned exposition is of incalculable value as an educator of the public mind. Many important questions in which the miner is vitally interested are pressing for settlement. The public is taking an increasingly active part in the settlement. When not blinded by prejudice and ignorance, the public is essentially fair-minded; it only needs education. This exposition offers to the men at the head of the mining industry an opportunity which probably will not recur for a decade, to give the public an insight into the importance, the stability and the solidarity of the industry, its legitimate speculative and investment features, the need of capital, of fair treatment, of wise legislation, of public support and co-operation. Surely this is sufficient commercial incentive."

Already many applications for exhibit space have been received by Professor van Barneveld, who is sanguine that the mining display will be well up to expectations. The fact that California owes to mining its first great advertisement to the world, in '49, lends peculiar interest to this department of the exposition, in addition to the latter expansion of the industry on a large scale in Australia, South Africa, Alaska and now into the hitherto unexplored regions of South American and Asia.

"The Department of Mines and Metallurgy," says Professor van Barneveld, "deals with the natural mineral resources of the world; their exploration, exploitation, conversion into metal; their manufacture into structural forms and into raw material for various industries. It takes in the metals and the non-metals, including cement, clay, oil, gas, salt, gypsum, nitre and the other minerals and their products.

"The natural resources, of course, will be exhibited by the states of the Union, through their several state commissioners, and by the various nations, through their accredited commissions and representatives. It is hoped that each country and state will make a carefully selected exhibit, emphasizing distinctive mineral product, thereby eliminating the usual duplication—the horror of an endless row of cases.

"It has been suggested that the exposition of mining operations proper, that is to say, prospecting, development and ore extraction, presents some difficulty. It may be said that the science and art of mining is a continuous overcoming of difficulties, and we confidently look to the proven ingenuity and resourcefulness of the miner to devise ways and means of illustrating the everyday mining processes. Machinery plays an important part in the operating end of mining, and we expect to develop an interesting, instructive ex-

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COAL DUST EXPLOSION TESTS.

Bulletin No. 56 of the Bureau of Mines, entitled "First Series of Coal Dust Explosion Tests in the Experimental Mine," by George S. Rice, L. M. Jones, J. K. Clement and W. L. Ege, has been prepared for the purpose of placing before the mining public an account of the objects sought in the establishment of the experimental mine of the bureau a description of the arrangement and equipment of the mine and a detailed account of the first series of explosion tests, including a description of the recording apparatus used in connection with them.

The introduction by George S. Rice, in charge of the investigation at the mine, gives a brief account of the reasons which led to the establishment of the mine, states the object of the dust explosion tests and describes the phenomena of a dust explosion, with definitions of the terms used. The investigation is analyzed and a summary of the inflammability factors properly included in laboratory studies is given. The factors influencing the dust explosion, which are more or less under control of the operators, are enumerated and a list of the variable explo-

sions' characteristics which must be determined for each test is given. A summary of the problems which must be investigated in connection with the explosions and a statement as to the outlook for solutions is also made.

The requirements considered in connection with the selection of the mine site were:

It should be in a coal bed, the dust of which was inflammable; mine should be naturally dry and self draining; openings should be drifts to avoid complications of shaft wrecking; mine should be practically free of explosive gas; a supply of natural gas should be available so that tests with gas could be made if desirable; a good boiler feed water supply should be available, and mine should be near a railroad, but at some distance from dwellings.

These requirements were met in the selection of the site at Bruceton, 13 miles from Pittsburgh.

Development was begun in December, 1910. The mine at the time the first tests were made, which were considered to be preliminary tests, consisted of two main parallel entries a little over 700 feet long, nine feet wide, with a forty-one foot pillar between them. The entries were connected with cut throughs every 200 feet. A diagonal heading, 198 feet long, connected the air course at a point 117 feet from its mouth to a third opening. Ventilation was furnished by a small fan at the top of an air shaft, which is offset six feet from the air course fifty-five feet from the opening.

The main entry was lined with reinforced concrete for the first 169 feet, and a strongly reinforced concrete portal constructed at the main opening. Five rows of shelves three inches wide were installed on each side of the main entry. The explosions in the first series were originated by blown out shots of black powder from a cannon

at the face of the entry or a pipe imbedded in the coal. The shock wave from the shot would blow up the coal dust from a bench in front of the shot into a cloud and ignite it. Beyond this point the coal dust previously placed on shelves in like manner would be thrown into a cloud in advance of the flame and in turn be ignited.

At various points along the main entry, instrument stations had been constructed in the coal rib, which were separated from the explosion gallery by heavy steel plates. Four types of instruments were used in recording the results of the explosions. Pressure manometers were used to give a record on a revolving smoked paper of the variation in pressure at the particular point. Pressure circuit breakers, installed in the stations, were connected to recording apparatus in an outside observatory by means of wires passing through a pipe imbedded in concrete in a groove in the coal rib. When the circuit breakers were acted upon by a certain pressure the circuits were broken, the time of the breaks being recorded on a moving paper strip in the recording instrument at the surface. This permitted the determination of the velocities of the pressure wave between different stations. In like manner the velocity of the flame is obtained by a series of flame circuit breakers installed in the various stations. In addition, maximum pressure gauges measured, by the compression of copper cylinders, the maximum pressure exerted at various points. Detailed descriptions of these apparatus are given.

The first series consisted of fifteen tests. Several of these were given before large numbers of spectators, that of December 30, 1911, before about 500 persons. A large part of the value of this series was the educational work performed in convincing many persons, who still doubted the explosibility of coal dust, that violent explosions could occur without the assistance of inflammable gas in the air. Apart from this result the tests were chiefly valuable in trying out the mine conditions and the various pieces of recording apparatus. Practically all of the tests were made for the purpose of obtaining information with respect to the phenomena accompanying the explosions. For this reason there was little opportunity for studying preventatives. The Taffenel barrier with a load of shale dust was not tried in the direct path of the explosion, but was installed a number of times in the air course parallel to the main entry. The results were inconclusive as to its value.

Each of the explosions is described after of igniting shot, quality and quantity of coal dust used, nature of preventative, outside manifestations of the explosion, inside observations after the explosion, length of flame and character of records obtained. Analyses of coal dust after the explosion, soot, coked dust, and mine air before and after the explosions are included in the description of the tests.

Some photographs of characteristic deposits of coked dust, carbon filaments and coke in situ are given. The great violence developed by coal dust explosions is strikingly shown by photo-

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graphs of the ruptured reinforced concrete lining. Where the roof covering was but eight to twelve feet thick, the arch was broken and with its load of roof strata was lifted over a foot, as indicated by the doubled up reinforcement.

PRE-EMPTORS' LAWS IN BRITISH COLUMBIA.

So much confusion and ignorance exists in the minds of many as to the exact conditions under which land in this province may be pre-empted from the Dominion Government, that the following summary of the conditions and regulations relating thereto, published by the Vancouver News-Advertiser, is both timely and useful:

Crown lands, where such a system is practicable are laid off and surveyed into quadrilateral townships, containing thirty-six sections of one square mile in each. Any person, being the head of a family, a widow, or single man over the age of eighteen years, and being a British subject, or any alien, upon his making a declaration of his intention to become a British subject, may, for agricultural purposes, record any tract of unoccupied and unreserved Crown lands (not being an Indian settlement) not exceeding one hundred and sixty acres in extent.

No person can hold more than one pre-emption claim at a time. Prior record of pre-emption of one claim and all rights under it are forfeited by subsequent record of pre-emption of another claim.

Pre-emptions cannot be staked by an agent.

Land recorded or pre-empted cannot be transferred or conveyed until after a Crown grant has been issued.

Such land, until the Crown grant is issued, is held by occupation. Such occupation must be a bona fide personal residence of the settler or his family.

The settler must enter into occupation of the land within 30 days after recording, and must continue to occupy it for three years, inclusive of any leave of absence which may be granted him.

Continuous absence for a period longer than two months consecutively of the settler or family is deemed cessation of occupation; but leave of absence may be granted not exceeding six months in any one year, inclusive of two months' absence.

Land may be considered abandoned if unoccupied for more than two months consecutively.

If so abandoned, the land becomes waste lands of the Crown.

The fee of recording is two dollars.

The settler shall have the land surveyed at his own instance (subject to the ratification of the boundaries) within five years from the date of record.

After survey has been made, upon proof in declaration in writing of himself and two other persons of occupation for two years from date of pre-

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PART II. The Examination of Minerals.—On the Occurrence and Some Physical Characters of Minerals. Simple Tests with Wet Reagents. Examination of Minerals with the Blow-Pipe. Simple and Characteristic Reactions of the Constituents of Common Minerals. Blow-pipe Tests useful in the Determination of Common Minerals. Quantitative Flame-reactions of the Felspars and their Allies. Examination of the Optical Properties of Minerals.

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Vancouver, B. C.

emption, and of having made permanent improvements on the land to the value of five dollars per acre, including the clearing and cultivation of at least five acres, the settler, on producing the pre-emption certificate, obtains a certificate of improvement upon payment of a fee of \$2.00.

At the end of three years, and having fulfilled the terms of improvement and cultivation as above, the pre-emptor will be entitled to a Crown grant on payment of \$10.

The price of Crown lands pre-empted is \$1 (4s) per acre, which must be paid

in four equal instalments, as follows: First instalment two years from date of record of pre-emption, and yearly thereafter, but the last instalment is not payable till after the survey, if the land is unsurveyed.

Two, three or four settlers may enter into partnership with pre-emptions of 160 acres each, and reside on one homestead. Improvements amounting to \$2.50 per acre made on some portion thereof will secure Crown grant for the whole, conditions of payment being same as above.

No Crown grant can be issued to an alien who may have recorded or pre-empted by virtue of his declaring his intention to become a British subject, unless he has become naturalized.

The heirs or devisees of the settler are entitled to the Crown grant on his decease.

Purchases.

Crown lands may be purchased to the extent of 640 acres, and for this purpose are classified as first and second class, according to the report of the surveyor. The minimum area that may be purchased shall be forty acres, measuring 20 chains by 20 chains, except in case where such area cannot be obtained.

Purchased lands may be staked by an agent.

Lands which are suitable for agricultural purposes, or which are capable of being brought under cultivation profitably, or which are wild hay meadow lands, rank as and are considered to be first-class lands. All other lands, other than timber lands, shall rank and be

classified as second-class lands. Timber lands, that is, lands which contain milling timber to the average extent of eight thousand feet per acre west of the Cascades (Coast Range) and five thousand feet per acre east of the Cascades (Coast Range) to each one hundred and sixty acres are not open for sale.

The major portion of the Crown lands in the central interior is now under reserve for pre-emption only.

The minimum price of first-class lands shall be \$10 per acre, and that of second-class lands \$5 per acre; provided, however, that the chief commissioner may for any reason increase the price of any land above the said prices.

No improvements are required on such lands unless a second purchase is contemplated. In such case the first purchase must be improved to the extent of \$3 per acre.

When the application to purchase is filed the applicant shall deposit with the commissioner a sum equal to fifty cents per acre on the acreage applied for. When the land is finally allotted the purchaser shall pay the balance of the purchase price.

Lease.

Lease of Crown lands which have been subdivided by survey in lots not exceeding twenty acres may be obtained; and if requisite improvements are made and conditions of the lease fulfilled at the expiration of lease, Crown grants are issued.

Leases (containing such covenants and conditions as may be thought advisable) of Crown lands may be granted by the Lieutenant-Governor-in-Council for the following purposes:

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NORTH BOUND				Distance from Victoria	EFFECTIVE 7.00 A.M. JULY 25th, 1913	SOUTH BOUND				
No. 7 First-Class Sunday Only	No. 5 First-Class Except Sunday	No. 3 First-Class Daily	No. 1 First-Class Except Sunday			No. 2 First-Class Except Sunday	No. 4 First-Class Except Sunday	No. 6 First-Class Except Sunday	No. 8 First-Class Saturday Only	No. 10 First-Class Sunday Only
A.M.	P.M.	P.M.	A.M.			A.M.	A.M.	P.M.	P.M.	P.M.
De. 10.00	De. 5.00	De. 2.00	De. 9.00	—	..... Victoria	Ar. 8.30	Ar. 11.30	Ar. 4.30	Ar. 7.15	Ar. 6.00
" 10.05	" 5.05	" 2.05	" 9.05	.60	..... Hillside	" 8.25	" 11.25	" 4.25	" 7.10	" 5.55
" 10.20	" 5.20	" 2.20	" 9.20	5.26	..... Royal Oak	" 8.10	" 11.10	" 4.10	" 6.55	" 5.40
" 10.25	" 5.25	" 2.25	" 9.25	6.34	..... Beaver Lake	" 8.05	" 11.05	" 4.05	" 6.50	" 5.35
" 10.35	" 5.35	" 2.35	" 9.35	8.91	..... Elk Lake	" 7.55	" 10.55	" 3.55	" 6.40	" 5.25
" 10.40	" 5.40	" 2.40	" 9.40	10.69	..... Keating	" 7.50	" 10.50	" 3.50	" 6.35	" 5.20
" 10.45	" 5.45	" 2.45	" 9.45	12.83	..... Saanichton	" 7.45	" 10.45	" 3.45	" 6.30	" 5.15
Ar. 11.00	Ar. 6.00	Ar. 3.00	Ar. 10.00	17.10	..... Sidney	De. 7.30	De. 10.30	De. 3.30	De. 6.15	De. 5.00

SPECIAL RULES

North bound trains will have right of track over trains of same or inferior class South bound.

Trains and engines will not exceed ten miles per hour over bridges between Hillside and Beaver Lake, and will approach all spur track switches with train under complete control.

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This time table is not intended for the information of the public, nor as an advertisement of the time of any train. The Companies reserve the right to vary from it at pleasure.

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(a) For the purpose of cutting hay thereon, for a term not exceeding ten years.

(b) For any purpose whatsoever, except cutting hay as aforesaid, for a term not exceeding twenty-one years.

Leases shall not include a greater area than one thousand acres.

Leased lands may be staked by an agent.

The British Columbia Government, from time to time, withdraws from sale or lease certain of its public lands by order-in-council. This is done for various purposes, such as to protect railroads in their lines of location, to hold the land from settlement pending its being surveyed, and for other proper reasons.

Without pretending to say what the Provincial Government will do touching the subsequent disposal of these lands, it may be stated that the policy seems to be to set aside one-third of the sec-

tions for the coming provincial university, one-third for pre-emption, and the remainder to be opened for sale under the land laws at such time as there would seem to be a legitimate demand.

It should be borne in mind that all of these lands so reserved are nevertheless open for pre-emption by settlers at any time. The reservation holds only as regards sale or lease.

SONG OF THE ASCETIC.

By Gilbert K. Chesterton.

If I had been a Heathen,
I'd have praised the purple vine,
My slaves should dig the vineyards,
And I would drink the wine;
But Higgins is a Heathen,
And his slaves grow lean and grey,
That he may drink some tepid milk
Exactly twice a day.

If I had been a Heathen,
I'd have crowned Neera's curls,
And filled my life with love affairs,
My house with dancing girls;
But Higgins is a Heathen,
And to lecture rooms is forced,
Where his aunts, who are not married,
Demand to be divorced.

If I had been a Heathen,
I'd have sent my armies forth,
And dragged behind my chariots
The Chieftains of the North.
But Higgins is a Heathen,
And he drives the dreary quill,
To lend the poor that funny cash
That makes them poorer still.

If I had been a Heathen,
I'd have piled my pyre on high,
And in a great red whirlwind
Gone roaring to the sky;
But Higgins is a Heathen
And a richer man than I;
And they put him in an oven
Just as if he were a pie.

Now who that runs can read it,
The riddle that I write,

Of why this poor old sinner,
Should sin without delight—?
But I, I cannot read it
(Although I run and run),
Of them that do not have the faith,
And will not have the fun.

—From the New Witness.

THE CUSSSED DAMOZEL.

The Cussed Damozel cut loose
About half-past eleven,
Prepared to do as wild a deed
As any under heaven.
Oil-soaked rags were in her hands,
And the bombs in her grip were seven.

She cried: "We'll blow this mansion up
Where Lloyd and George do dwell!"
"Wow!" cried her fellow-suffs, whose
names

Were sweet as caramel,
Millicent, Pansy, Rosalys,
Phyllis and Christabel.

—Chicago Tribune.

DOMINION FINANCES SHOW LARGE SURPLUS.

An Ottawa despatch of the 11th inst. says:

The fiscal year closed today, and the estimate of Hon. Mr. White in his budget speech is fully justified. The oft-repeated complaint with reference to tight money is not reflected in any way in the financial statement of the country.

There is a surplus of current account of \$56,500,000. The public debt is reduced by \$20,000,000, this amount representing the surplus of revenue over capital and consolidated outlay.

The total revenue on consolidated fund was \$168,600,000, as against \$136,108,217 in the previous year. The expenditure in the same period was \$112,000,000, as compared with \$98,161,446.

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BRITISH COLUMBIA

THE MINERAL PROVINCE OF CANADA

Gold, Silver, Lead, Copper, Coal, Coke, Iron, Zinc, Platinum, etc.

The aggregate value of the Mineral Production of British Columbia is

\$430,137,522

As follows: Placer Gold, \$72,194,603; Lode Gold, \$70,859,022; (Total Gold, \$143,053,625); Silver, \$33,863,940; Lead, \$27,520,753; Copper, \$73,723,562; Zinc, Iron, etc., \$1,528,403; Coal and Coke, \$132,871,155; Building Stone, Brick, Cement, etc., \$17,576,084.

The substantial progress of the Mining Industry of the Province is strikingly exhibited in the following table, which shows the value of production for successive five-year periods:

For all years to 1892, inclusive.....	\$ 81,090,069
For five years, 1893-1897.....	31,420,396
For five years, 1898-1902.....	77,218,073
For five years, 1903-1907.....	109,797,744
For five years, 1908-1912.....	130,611,240

Aggregate value of Mineral Production.....	\$430,137,522
--	----------------------

A Great Mining Region

British Columbia is pre-eminently **A GREAT MINING REGION**. Its mines already yield virtually all the Lead mined in Canada, more than one-half the Gold, nearly three-quarters of the Copper, fully one-quarter of the Coal and about one-tenth of the Silver, and a share of some other minerals. This high rank has been reached notwithstanding that prospecting of even the most desultory character has been carried out only on a small, almost insignificant, part of the area, and this chiefly in districts lying south of the main line of the Canadian Pacific Railway.

Minerals Widely Distributed Throughout British Columbia

COAL occurs in vast quantities. The recently published estimate of a well-known Dominion geologist places the coal content of the various known coal areas of the Province at: Anthracite, 61,000,000 tons; bituminous, 39,674,000,000 tons; lignite, 490,000,000 tons; total, 40,225,000,000 tons. Coal mines are being worked in Southeast Kootenay, Similkameen, Nicola Valley, Vancouver Island, and others are being opened on Queen Charlotte Islands, Skeena River, and other widely-separated parts of the Province.

GOLD is also found, practically all over the Province. The largest known Placer Gold fields are in Cariboo and Atlin districts. An official estimate of gold-bearing gravels in Quesnel division of Cariboo district alone is 2,500,000,000 to 3,000,000,000 cubic yards, containing \$300,000,000 worth of gold. Lode Gold is now obtained chiefly from mines in Rossland, Nelson, Boundary, and Similkameen districts. The Coast district gives every promise of also yielding much lode gold when more mining shall be done in it.

SILVER in comparatively large quantity comes from Slocan, and Boundary mines. Lardeau, Rossland, Nelson and Coast district mines also produce silver. Much more is expected from mines now being developed in Portland Canal and Observatory Inlet and the Skeena and Omineca districts.

LEAD is mined in greater amount in East Kootenay than other parts, but Slocan, Ainsworth, Nelson and Lardeau mines also produce this metal. Skeena district gives promise of producing lead ere long.

COPPER mines in Boundary district are the largest producers of this metal in Canada. Rossland and Coast districts also yield copper. Kamloops and Similkameen are both known to have large deposits of copper ores awaiting utilization.

ZINC AND IRON will yet become important contributors to the mineral production of British Columbia, there being much ore containing one or other of these metals, in various parts of the Province.

OTHER MINERALS occur, though little has yet been done to utilize them. Among those found are: Cinnabar (Mercury), Pyrites, Scheelite, Tungsten, Molybdenum, Platinum, Mica, Gypsum, Magnesite, Chromite, Asbestos, Petroleum, etc.

REDUCTION WORKS include Copper and Lead Smelteries, Stamp Mills, Silver-Lead and Zinc Concentrating Mills, Electrolytic Lead Refinery, etc. The largest Copper Smeltery in the British Empire is that of the Granby Company at Grand Forks, B. C. Smelteries and Mills are equipped with modern machinery and metal-saving appliances.

CAPITAL—Capital can now find here many excellent opportunities for investment, as the value placed on mines and undeveloped properties has reached a reasonable basis. If proper business care is used, and the experiences of competent men utilized, these investments should be safe as well as profitable.

MINERAL LANDS—Mineral lands are open to location to any person over 18 years of age, who has obtained a free miner's certificate, and perfect title to lode claims can be easily secured after \$500 worth of work has been done per claim.

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THE HON. THE MINISTER OF MINES, VICTORIA, B. C.

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AND ENGINEERING NEWS

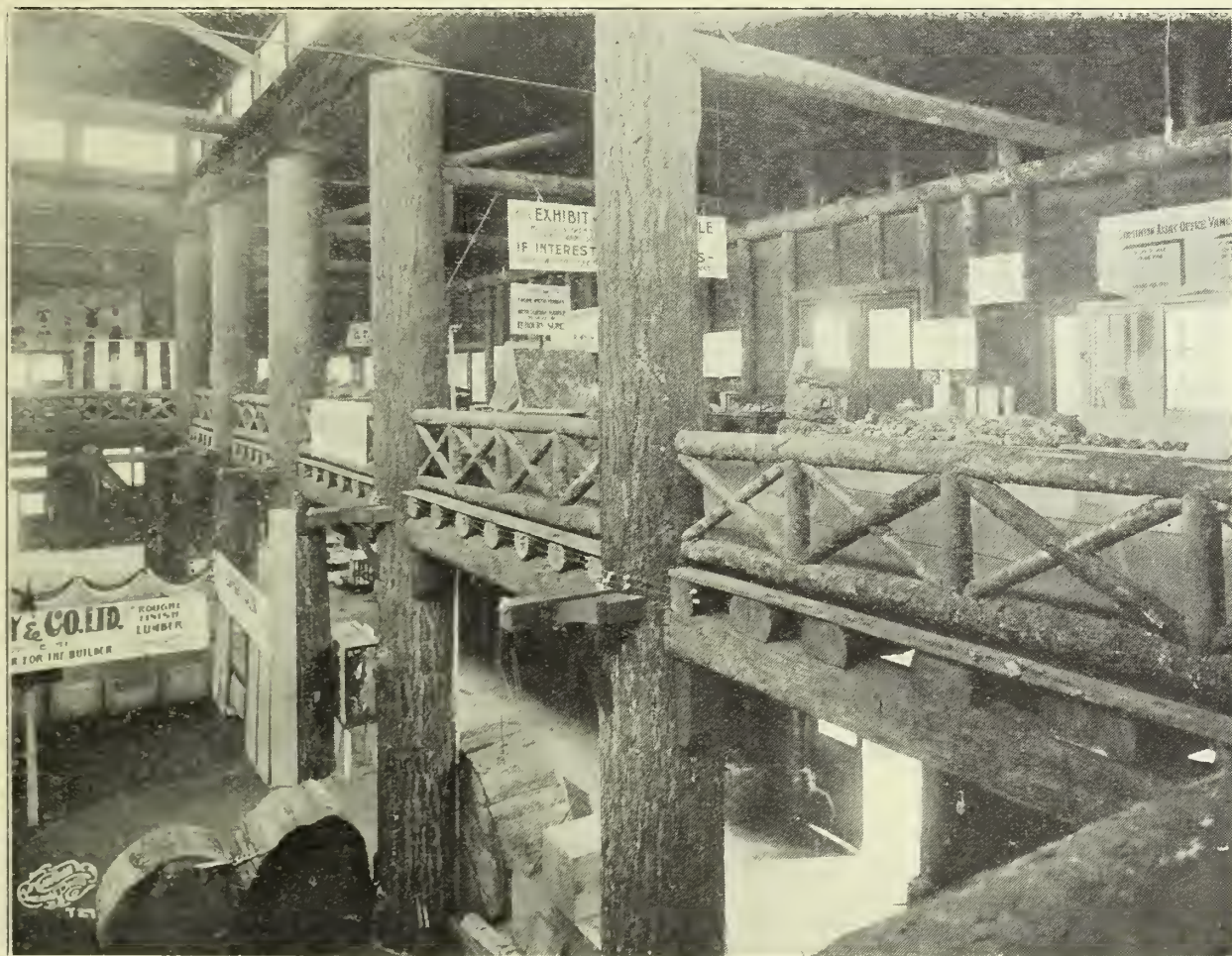
VOL. XV.

VANCOUVER, B.C., SEPTEMBER, 1913.

No. 9

Economic Minerals and Mining Industry of British Columbia

Excerpts from a Pamphlet Compiled by the Staff of the Mines Branch of the
Canada Department of Mines



Section of Mineral Exhibit at Vancouver Exhibition.

Recently there was compiled under the direction of Mr. John McLeish, Chief of the Division of Mineral Resources and Statistics, Canada Department of Mines, a pamphlet prepared primarily for distribution at the International Exhibition at Ghent, Belgium, but also distributed among members of the International Geological Congress, held at Toronto, Ont., in August. Mr. McLeish had the co-opera-

tion of several officers of the Mines Branch staff, and the objective, as stated in the preface by Dr. Eugene Haanel, Director of Mines, was to present in a popular form a brief sketch of the more important economic minerals, and of the mining and metallurgical industries of Canada. Dr. Haanel remarked further:

"Numerous minerals of economic importance, widely distributed, occur in the

Dominion of Canada, although, as yet, only small fractions of the probable productive areas have been carefully prospected. Within its boundaries, Canada still possesses large areas of great potential importance, and each season brings to light new deposits of minerals not previously discovered.

"A short introductory statement, giving some data of general interest, and includ-

ing a brief description of the main geographic and geologic features of the country, precedes the detailed description. Each individual metal or mineral product is treated separately, and arranged in alphabetical order. The occurrence or distribution of each mineral is, in general, taken up in geographical order, from east to west. At the end of the pamphlet brief summary statements of the mineral production of each province of the Dominion are included, and in these reference is made to the laws governing mining and the ownership of mining lands in the various provinces and territories, and the names and addresses are given of the several government departments—whether Provincial or Dominion—administering these laws or regulations.

"In this brief description many interesting and important details have, of necessity been omitted, and, in many instances, reference is made to localities and occurrences where preliminary investigations have indicated only future possibilities.

"The particulars and statistics have all been compiled from official sources, and, where advisable, published papers and reports have been freely quoted from; for which general acknowledgment is here made.

"More detailed information respecting any particular mineral, ore, product or district, may usually be obtained from the proper official department of the various Provincial Governments, or from the Director of the Mines Branch of the Department of Mines, Ottawa."

Concerning British Columbia's Minerals.

As the purpose of the B. C. Mining Exchange at this time is to direct attention to the parts devoted to the minerals and mining industry of British Columbia in the pamphlet, comment on the publication as a whole will be very brief. Generally, it would appear that a most useful pamphlet has been prepared and published by the Mines Branch of the Canada Department of Mines. Having less than 70 pages of text, the compilation is, necessarily, as stated by the Director of Mines, "a brief sketch" of the subjects it deals with in summary form. Nevertheless it gives much valuable information and is illustrated with half-tone reproductions of photographs that serve to convey an idea of the importance of works connected with the mining and metallurgical industries of the Dominion. In addition, there is a mineral map of Canada to add to the usefulness of the pamphlet.

No opinion will here be given as to the general accuracy of the information contained in the pamphlet, for that is beyond the qualifications of a provincial writer. Judging by the standard of that relating to British Columbia, however, the opinion may be expressed that it is quite likely there is, on the whole, little to find fault with in this direction. Without any carping criticism, though, it may be said that there was room for improvement in the editing, while here and there are inaccuracies which should have been avoided. For instance, why include Granby Bay among the places at which are situated "the most important active producing mines," when there has not yet been any production of ore made there; why state that there are gold mines operating in the Lardeau and at Carmi; why include

Bull Run and Burmis as places in British Columbia where iron occurrences have been noted, when there are no places so named in the Province; and why state that an important smelting industry has been established at Nelson, when several years ago it was chronicled in one of the most comprehensive reports ever issued by the Mines Branch that the smelter at Nelson "went out of commission" in September, 1907, to which may be added the news that the smelting works at Nelson was entirely destroyed by fire in 1911. However, errors like these are not unusual in long-distance reviews of the mining industry of British Columbia, and they are amply compensated for in the generally commendable character of the information relative to mining in this Province included in the pamphlet.

An Excerpt from the Introduction.

Under the heading of "Introductory," after other parts of the Dominion have been dealt with, the following notes are given:

"The mountain belt of British Columbia and the Yukon constitute the next great physiographic unit. This is the northern portion of the great Cordilleran belt, which extends along the whole western side of the North American continent, from Central America to Alaska. The Canadian portion of the belt is about 1300 miles in length. On the eastern flank of this Cordilleran belt, we have the Rocky Mountain ranges, composed chiefly of Palaeozoic and Mesozoic rocks. This mountain belt is particularly important, because of the immense reserves of bituminous coal, of Cretaceous age, found in many sections of the ranges.

"Westward of the Rocky mountains lie a series of mountain ranges, collectively designated as the Gold ranges. They are composed of Archean rocks, with which are associated granites and a great thickness of older Palaeozoic beds, all much disturbed and metamorphosed. Westward of these ranges lies a section of country with somewhat diversified topography, which is usually described as the Interior Plateau of British Columbia. Its width from east to west is about 100 miles; its extent from north to south probably about 500 miles. It differs from the mountain ranges to the east chiefly in the lack of any lofty mountain peaks; its main elevation is about 3500 ft. above sea level. The plateau has been the seat of much volcanic action during Miocene times.

"Beyond the plateau to the north the whole width of the Cordillera appears to be mountainous, about as far as the 59th parallel of latitude. Still farther north the ranges decline or diverge, and in the basin of the upper Yukon rolling or nearly flat land, at moderate elevations, again begins to occupy wide intervening tracts.

"The western border of the Cordillera, along the Pacific coast, is formed by the Coast range. This range runs northward from near the estuary of the Fraser river to beyond the head of Lynn canal. It has a breadth of about 100 miles. It consists largely of granite batholiths, on the margins of which occur highly altered Palaeozoic sediments.

"Beyond the Coast range, near the edge of the Continental plateau, a partly submerged range of mountains forms Vancouver Island and the Queen Charlotte islands. The rocks resemble those of the

Coast range, but include also masses of Triassic and Cretaceous strata, which have participated in the folding. Later Miocene and Pliocene beds occur along some parts of the shores.

"The Cordilleran belt of America is noted for its important deposits of economic minerals, especially silver, gold and copper. In western Canada it contains important copper, copper-gold and silver deposits; and large returns have also been obtained from gold-bearing gravels. Reference has already been made to the Cretaceous coal deposits of the eastern part of the belt. Similar deposits of Cretaceous age occur on Vancouver Island, and have been for many years the most important source of fuel on the Pacific coast.

"The Cordilleran region of Canada, when fully explored, is, undoubtedly, destined to become one of the most important mining sections of the world."

The next following excerpts deal with the minerals of British Columbia:

Copper.

"British Columbia is at present the principal copper-producing province of the Dominion of Canada, copper-bearing minerals being found in numerous localities in various parts of the province. The important minerals are usually chalcopyrite or bornite, or both. These may occur alone, but usually they are found in association with other minerals, the commonest of which are pyrrhotite, magnetite, pyrite, mispickel, and, occasionally, blende and galena. The known occurrences are too numerous to be considered individually in a review of this character. The principal districts in which important discoveries have been made are in southern British Columbia, in the West Kootenay and Kamloops districts, and in the Coast district at a number of points along the mainland and on some of the coastal islands. The most important active producing mines are at Rossland, at Phoenix, and at Motherlode in the interior, and at Britannia or Howe sound, Texada island, and Granby bay on the coast. Prospecting exploratory work and development is also being carried on at a number of points, both in the interior of southern British Columbia and at several coastal points.

"The ore deposits of Rossland occur in fissure veins and in lodes or shear zones, the ore forming a network of veinlets in the fractures, and also replacing more or less completely the intervening fragments of country rock, sometimes also partially replacing the wall rock. The ores may be classified, according to Brock, on the basis of their mineral contents, as follows:—

"(a) Pyrrhotite and chalcopyrite, with some pyrites and occasionally a little arsenopyrite, massive or mixed with gangue and rock matter. Free gold occurs, though but seldom visible. Rarely, molybdenite and magnetite are found, and, on a few occasions, blende and galena have been seen. This ore is the typical ore of the district, and, at times, the pyrrhotite contains 0.65 per cent. nickel and 0.59 per cent. cobalt.

"(b) Pyrrhotite, coarse textured and massive, containing very little copper and little gold.

"(c) Veins of pyrite and marcasite with arsenopyrite and some blende and galena. Such veins occasionally contain silver as an important constituent.

"(d) Impregnations of arsenopyrite, pyrrhotite, pyrite, molybdenite, a little chalcopyrite, bismuthinite, and native gold. These occur particularly in and around small pegmatitic or aplitic alkali syenite dikes.

"(e) Gold-bearing quartz veins.

The gangue associated with the Rossland ores is usually more or less altered country rock, with which is associated some quartz, and, in places, calcite. The principal valuable constituent recovered from the ores is gold, so that strictly they should be classed as gold ores containing a little copper. The ores, however, are treated by blast furnace smelting and the gold is afterward recovered from the copper matte. The gold content of the ore varies from 0.4 to about 1.5 oz., and the silver from 0.3 to 2.5 oz. per ton; the copper from 0.7 per cent. to about 3.5 per cent. Ores containing higher value in gold, or more copper, have been found occasionally.

"The ore deposits of the Boundary districts are, at present, the most important deposits of copper-bearing ore in Canada. The orebodies occur in mineralized zones in altered limestones. They lie at different horizons in this zone, but generally occur in the lower or outer portions. They range in size from small lenses, less than 20 ft. in thickness and 100 ft. in length, to huge orebodies, such as that at the Knob Hill-Ironsidles mine at Phoenix, which has a thickness of 125 ft., a known width of 900 ft., and a length of about 2,500 ft. The ore throughout is remarkably uniform and is almost self-fluxing. It consists of finely disseminated chalcopyrite with pyrites and hematite, in a gangue composed essentially of epidote, garnet, quartz, calcite, and chlorite. Magnetite occurs in distinct masses, or lense-like bodies, both in and along the borders of the main orebodies. The chalcopyrite contains all the copper, gold, and silver, the average ore having from 1.2 to 1.6 per cent. of copper, with about \$1 in gold and silver per ton. The important producing mines are situated in or near the town of Phoenix, and at Deadwood, the latter about four miles from Greenwood, B. C. The ores are smelted in water-jacketed blast furnaces, producing a matte that is afterward treated in Bessemer converters.

"The ore deposits of the Coast district are of three distinct types. The Britannia mines, on Howe sound, are producing chalcopyrite ores, containing small quantities of gold and silver. These ores occur in a mineralized shear zone of considerable extent, and are highly siliceous. The development work is very extensive, and there is reason to believe that the deposits will prove to be very large. The ores are concentrated and shipped to the United States for treatment. Several mines on Texada island produce bornite, with which is associated more or less chalcopyrite. The orebodies occur as a series of lenses in limestones, but usually more or less closely associated with certain igneous intrusions. Very

important deposits of pyrites, with which is associated chalcopyrite, have been found less than a mile from tide water, near Granby bay, and about 110 miles from Prince Rupert. Extensive development work, performed during the last three years, has shown that these deposits are very large, and preparations are under way to mine these ores and to treat them in blast furnaces.

"Copper sulphides, chiefly chalcopyrite and bornite, occur at many points along the Pacific coast and on the adjacent islands. Some prospecting and some development work have been done at a few points, and the future will probably witness the development of other important producing mines.

"There are three copper smelting plants in operation in southern British Columbia. One at Trail treats the ore of the Rossland camp, producing a copper matte in which the precious metals contained in those ores are collected. This matte is shipped to the United States for refining. A very extensive plant, at Grand Forks, B. C., treats ores derived from Phoenix, in the Boundary district, and another at Greenwood smelts ores from the Motherlode, and some other mines belonging to the operating company. Both of these plants are equipped with water-jacketed blast furnaces, and with Bessemer converters for making blister copper. On the coast there is a fully-equipped smelting plant, at Ladysmith, on the east side of Vancouver island, about 65 miles north of Victoria. This is a custom plant, and at present it is not being operated. A new plant is under construction at Anyox, on Granby bay, and it is expected that it will be in operation in December, 1913.

"All smelting companies in British Columbia smelt custom ores in addition to treating ores from their own mines and it is probable that the new smelter at Anyox will also accept custom work.

"The total copper production of British Columbia, in 1912, is estimated at 50,526,656 lb., valued at \$8,256,561, New York market average prices for the year."

Gold.

"About the time Simon Fraser, in the first years of the nineteenth century, crossed the Rockies to the head of the river now bearing his name, the early settlers of Vancouver island had begun to realize the wealth of British Columbia, and had sailed away from Moresby island, one of the Queen Charlottes, with a cargo of rich gold ore which paid them well for their enterprise, but for some reason they did not repeat the venture. Practically, therefore, the first mineral development is that due to the Fraser River gold rush in 1858 and succeeding years, when the Cariboo and Quesnel district were discovered, followed in 1874 by the discovery of gold in Cassiar.

"Lode gold mining may be said to have commenced in 1890 with the staking of the Rossland gold-copper camp, followed by the discovery of the large low-grade copper-gold orebodies of the Boundary. These ores, though one of the main sources of the province's gold production, are complex gold-silver-cop-

per ores and are mentioned under the head of copper. Practically all the copper ores of the province are auriferous to a greater or less extent.

"The Nickel Plate mine at Hedley in the Similkameen is the premier gold mine of the province, and its 40-stamp mill has been a steady producer for a number of years, its 1911 output being valued at \$679,000. The ore here is an auriferous mispickel with varying amounts of copper and iron pyrites occurring in bodies replacing country rock along or near the contact of igneous rocks.

"In the Nelson district there are several gold properties working, some shipping ore to the smelters, but the larger number stamp-milling and shipping the concentrates. Amongst these are the Granite, near Nelson; the Dundee, Wilcox, and Yankee Girl, at Ymir; the Motherlode and Queen, on Sheep creek and the Second Relief, at Erie. Beside this district, there are a few gold mines operating in the Lardeau; at Paulson and Carmi, in the Boundary; on Bridge river, west of Lillooet; on Princess Royal island; on Moresby island; and on Taku arm, Atlin lake.

"There is still a very considerable production of gold from the placer and hydraulic properties of the province, the chief centres being the Cariboo district, Quesnel, the Omineca and Atlin, and there is yet much country which is comparatively unexplored. The gold is either in the original pre-glacial gravels, or in more recent deposits derived from these."

Iron.

"In the province of British Columbia, some iron ore has been mined on Texada island and shipped to the smelter at Irondale, Wash., but beyond this the iron industry of the province may be said to be as yet undeveloped. A number of occurrences of iron ore, chiefly magnetite, have been noted on Vancouver island. These, so far as observed on the coast, are usually found on the end or flank of a ridge following roughly the contours of the hills and occur almost always along and adjacent to the contact of limestone and some eruptive rock. Among those that have attracted attention might be mentioned the properties at Head bay, Klanch river, Quinsam river, and Gordon river, all on Vancouver island, and the Texada island ores already mentioned. In the interior of the province occurrences of iron have been noted at Kamloops, Kitchener, Bull river, and elsewhere, but no mining has been done on any of these deposits with the exception of a small shipment of ore as a flux from the Cherry Creek mine near Kamloops."

Lead.

"Practically all the lead produced in Canada in recent years has come from the British Columbia silver-bearing galena ores. The Bluebell mine was discovered in 1825 but active operations in the Ainsworth camp date from about 1888, with Sandon camp following in 1892, and the discovery of the North Star, St. Eugene, and Sullivan, all in East Kootenay, in that year and the next. The latter are large bodies, com-

paratively low in silver content, the St. Eugene ore being argentiferous galena with some zinc blende and a little pyrite forming irregular lenses in a fissured zone within Pre-Cambrian quartzites.

"There are a few producing mines in the Sheep Creek district, south of Nelson, but the larger number of mines are located in the Ainsworth and Slocan districts. The Sandon-Silverton camps especially are showing promise, development at depth having been very satisfactory. The ores are argentiferous galena and tetrahedrite with native silver and sometimes gold, argentite, zinc blende, etc., in veins cutting sediments. The ores of the Lardeau may be said to belong rather to the silver ores than to the lead, and the same may be said of the Greenwood camp. The West Fork of the Kettle river will probably add some shippers to the list with the opening of traffic on the Kettle Valley railway, and the Canadian Northern railway may provide shipping facilities for the silver-lead properties of the North Thompson River valley.

"West of Princeton, in the Similkameen, near the head of Tulameen river, a new camp is being opened, but no shipments have yet been made. On the coast, Portland Canal district is another silver-lead camp, and the newer discoveries toward the Bear river are most promising.

"The present year will see shipments from several mines in the neighborhood of Hazelton on the Skeena river. Development has been going on quietly for several years awaiting the advent of transportation, with the result that the camp starts shipments with a fair amount of development done.

"The lead ores of British Columbia are nearly all shipped to the smelter of the Consolidated Mining and Smelting Co., at Trail, which operates in connection therewith an electrolytic lead refinery, the products of which are refined gold, silver, and lead; copper sulphate, and antimony.

"A few of the Coast ores find their way to American smelters."

Silver.

"The silver production of British Columbia comes mainly from the argentiferous galena ores of the province, which will be more fully described in the chapter on lead. In East Kootenay the orebodies are large and the silver content low, and the same may be said of the orebodies in the Sheep Creek section of West Kootenay, and the Bluebell mine on the east shore of Kootenay lake. The ores of the Slocan district are much higher in silver, probably averaging 75 oz. per ton of ore, whilst those of the Slocan City and Lardeau divisions are what are known as dry ores, containing little galena, the value being in native

silver and sometimes a little gold associated with argentite pyrrargyrite tetrahedrite, etc.

"A few galena and high-grade deposits are being worked in the Boundary district, notably near Greenwood, and the completion of the Canadian Northern railway may see shipments from the North Thompson River valley.

"In the neighborhood of Hazelton on the Skeena, a number of new properties are just entering the shipping list. The ore is galena containing gold value in silver.

"As mentioned before, there is a considerable amount of silver recovered from the gold and gold-copper ores and alluvial gold production of the province. These are more fully described under gold and copper. The copper-gold ores are treated in the various copper smelters of British Columbia, whilst the galena and silver ores go mainly to the lead smelter of the Consolidated Mining & Smelting Co., at Trail, B. C."

Zinc.

"The occurrence of zinc blende in British Columbia is frequently mentioned in the earlier reports on the province, but only in 1902 is definite reference made to zinc shipments, from the Payne and Bosun mines.

"In 1904 we find a number of mines producing zinc concentrate, though of

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this a great deal was apparently never shipped. In the next few years much experimentation was done on processes for zinc treatment, impelled by the high American import duty on zinc in ores. The year 1903 saw the appointment of the Zinc Commission by the Dominion Government, for the purpose of investigating the zinc resources of British Columbia and their commercial possibilities. The exhaustive report of the Commission was published in 1906. An electric smelting furnace was erected at Nelson in 1908, but did not go into commercial operation. At the present time two mines in the province—the Lucky Jim, and the U. S.—are operating for zinc alone, while the Monarch, Hewitt, Noble Five, Ruth, Sloane Star, Standard, Van-Roi, and Whitewater are producing hand picked zinc ore or concentrates as a by-product from the milling of galena ores. These concentrates as a rule contain value in silver. It is a notable fact that for some years the Lucky Jim was worked for its silver-lead value only.

"Other properties occur on Lynn creek near Vancouver, at Quatsino on Vancouver island, and at Owen lake, near Hazelton. These as yet, however, have made no shipments.

"The majority of the British Columbia galena ores contain enough zinc blende to make its separation and possible recovery a question of much importance.

"At present all British Columbia ores are shipped to the smelters in the United States. Shipments from Ontario are usually made to European smelters.

"The Mines Branch of the Department of Mines is now investigating the possibility of producing spelter by an electric smelting process. While considerable progress has been made during the last two years, the commercial practicability of the results obtained has yet to be determined."

Coal.

"In British Columbia there are three main districts in which coal mining operations are being actively pursued. These are the Crownsnest Pass region, in the eastern part of the province; the Nicola Valley district, in the central part, and the east coast of Vancouver island. Beside these, other coal basins are known and more or less prospected, but at present are too remote from means of communication to be of immediate economic value, although they constitute a reserve of fossil fuels with great possibilities.

"The Crownsnest Pass coal field is situated immediately west of the summit of the Rocky mountains, in Crownsnest pass. It is all included within the province of British Columbia, excepting a small portion in the immediate vicinity of the pass, which crosses the watershed into the province of Alberta. The Crows Nest branch of the Canadian Pacific railway crosses the northern part of the coal field, and skirts its western edge for a distance of 25 miles. The rocks of the coal field are of Cretaceous age. Mr. Jas. McEvoy has made an approximate estimate of the total available coal in this field. By taking the area covered by the coal measures as being 230 square miles, and assuming a work-

able thickness of coal seams of 100 ft., which does not appear to be excessive, he arrives at a total quantity of 22,595,200,000 tons. The opening of the coal mines in this field marked an epoch in the development of British Columbia. Before this time the smelting industries of the Kootenays, and of Washington in the United States, had to depend, in a great measure, on coke from the Coast coal mines, the transportation of which, added to a comparatively high initial cost, rendered this fuel very expensive; in fact, the cost of fuel to the smelters has since then been reduced to about one-half. Three large companies are now operating, and the output in 1912 was 1,413,583 tons, or about 50 per cent. of the total output of the province.

"Immediately to the north of the Crownsnest Pass basin of coal measures, but separated from it by a belt of the underlying limestones, there is another trough of coal-bearing Cretaceous rocks, which extends for a distance of some 50 miles, crossing the summit of the main range into Alberta at the Kananaskis pass. The difficulties of access, as compared with the other coal areas lying close to the railway, have militated against the immediate active development of these areas; but a railway line, connecting with the Canadian Pacific railway at Michel, has been located, and it is probable that before long this coal field will be exploited. That large quantities of coal exist in these measures was definitely proved in 1901, by a party of the Geological Survey, when in a section of 3386 ft., some 12 seams were observed, varying in thickness from 8 in. to 35 ft.

"The southern interior of the province contains a number of coal fields of growing importance. Near Princeton, one colliery has been already opened and has made small shipments of lignitic coal; but the area of this field is great—probably nearly 50 square miles—so that there appears a certainty that several other mines will eventually be opened in it. In the Tulameen valley, near Granite creek, the Columbia Coal and Coke Co. is endeavoring to open a colliery; there are some very promising outcrops, etc., high up on Granite creek and Collins gulch, but the long tunnel which the company is driving to cut the coal at depth has not, as yet, been successful in cutting workable coal. Mr. Camsell, of the Geological Survey, estimates this basin to have an area of about five square miles. The Nicola Valley coal field is situated to the south of Nicola lake in the Kamloops district of British Columbia. Although not as extensive as the Crownsnest field, or the Vancouver Island field, it is yet of great economic importance. It stands mid-way between them, hence the coal of the Nicola valley is manifestly destined to find a market in a considerable part of central British Columbia.

"In the northern interior there is another prospective field which attracts great interest at present, owing to its proximity to the line of the Grand Trunk Pacific railway, which is being constructed through this district. This is the Telkwa Valley field, in the northern part of British Columbia. Some of these areas are of considerable extent, and several have been proved to

contain coal of good quality and in beds of workable thickness. The character of the coal varies from a bituminous to a semi-anthracite.

"About 140 miles by trail north from Hazelton near the headwaters of the west fork of the Skeena river, is another coal field of great promise, known as the Groundhog coal field. This coal is anthracite or semi-anthracite in character. From present indications and developments it would seem as though this coal field would prove to be one of the most important developments that the province has seen for many years. The field is, as yet, only slightly developed, and, if but a fraction of its present promise is fulfilled, it is bound to have a wonderfully stimulative effect upon the future of the province. The centre of this field lies approximately in 56° 45' north latitude, 128° 15' west longitude. It was first discovered in 1903, though its full extent was not at that time recognized. More recent explorations have shown the field to extend in a northwesterly direction about 75 miles, and to have a width in places of about 30 miles. The rocks in which the coal occurs have been classed as of Cretaceous age. As illustrating the comparative importance of such an area as this, it may be stated that this area alone probably contains as much coal—possibly ten times as much—as is found in all the present known coal areas in the province of Nova Scotia.

"Vancouver island has been the seat of a coal mining industry since 1836, which in recent years has not only supplied a local demand but has been largely exported, to the State of California. The Vancouver island fields, now being exploited, are situated on the east coast of the island. These coal measures may be naturally divided into two distinct fields, separated by a gap of 12 miles of crystalline rocks in the district of Nanoose. The northern area is the Comox field, and the southern one the Nanaimo field. Another field, until recently quite undeveloped, exists in the vicinity of Suquamish, about 125 miles to the north. Seven collieries are now in operation in the district, and the production in 1912 was 1,571,682 tons.

"The coals of the various seams, although each has its own individual characteristics, are, as a whole, much alike, and furnish a bituminous coal of fair grade, the amount of fixed carbon in the best quality ranging from 50 to 60 per cent., and the percentage of ash from 5 to 10 per cent. The most striking feature of the seams is their great variability in thickness and character. The thickness varies from a few inches to more than 30 ft., sometimes within a lateral distance of less than 100 ft.

"Coal is also found in the Queen Charlotte islands, the most important coal-bearing group known in this group of islands being that found in a development of Cretaceous rocks on Graham island, the most northerly island of the group. In this field, coal outcrops have been located in several places between the Skidegate channel and Yakoun lake in the interior of the island.

"In the Peace River valley extensive coal fields are located and partly pros-

pected, but these are as yet far from transportation.

"Near Bear lake and river, tributaries of the Fraser river near its most northerly head, and near the located line of the Grand Trunk Pacific railway, a coal area is being developed which, according to recent reports has considerable promise and, being near the railway, assumes importance.

Miscellaneous Minerals.

Other notes give information about less important mineral occurrences in British Columbia.

Of antimony, it is mentioned that there is occasional recovery of this metal in the lead smelting and refining plant at Trail, antimony being a minor constituent of some of the silver-lead ores of southern British Columbia. Stibnite has been reported at Watkinson's about 23 miles above Lytton, on the Fraser river; on Cadwallader creek, Lillooet district; on the Alps and Alturus claims, north fork of Carpenter creek, Slocan district; and in Atlin district, on the western shore of Taku arm, about 10 miles north of Golden Gate.

Molybdenum is noted as occurring in the Giant mine, Rossland. Platinum has been found in many gold placer deposits—on the Similkameen, Tulameen, Tranquille, Fraser, North Thompson, and other creeks and rivers of British Columbia. Tin minerals have been reported from several localities in the Province. The occurrence of tungsten-bearing mineral, scheelite, was noted in quartz veins on the Meteor claim, Slocan City mining division; also at Hardscrabble creek, Cariboo district, where the scheelite appears to be very irregularly distributed in the country rock. It is mentioned, as an item of interest, that minute diamonds have been discovered associated with chromite, which is an accessory constituent of the peridotites in the Tulameen district. Fluorite has been noted at several places in the Province, and one occurrence, near Nelson, has been investigated as a possible source of this mineral. Graphite has been reported as having been found at Rivers Inlet and Alkow harbor. Gypsum has been found at the following places: At Salmon river, in the southern part of Kamloops mining division; Spatsum, on the main line of the Canadian Pacific railway, a few miles west of Ashcroft; on the Thompson river, 20 miles north of Kamloops; at Merritt, in Nicola valley; and near Granite creek, Tulameen district. Magnesite has been found at Atlin. Pyrites occur in Skeena river district, and on the Granby Co's property on Observatory Inlet. Salt springs have been noted on Admiral Island, near Nanaimo, and a salt deposit was lately reported from Kwinitza, 45 miles east of Prince Rupert, on the Grand Trunk Pacific railway. Cement materials on Saanich peninsula, Vancouver Island, and near Princeton, Similkameen, and an abundance of building stone—granite, limestone, marble, sandstone, slate, etc.—about complete the list, so far as British Columbia is concerned.

Concluding Notes.

"For many years British Columbia was the premier mining Province of Canada, and was only displaced in so far as magnitude of output is concerned in 1907, when Ontario forged ahead. In a certain

sense, this Province is still of first importance owing to the fact that mining is probably its most important industry. Physiographically the Province embraces a series of mountain ranges beginning at the Rocky Mountain range, forming the eastern border, and extending to the Pacific coast.

"Coal and metalliferous ores, including gold, silver, copper, lead, and zinc, together with clays, building stone, and gypsum, constitute the chief mineral resources. Antimony, platinum, molybdenum, and mercury are also found.

"With the exception of the placer gold mining of the Cariboo district, active productive mining operations are at present confined principally to the extreme southern portion of the province and to a district on Vancouver island, and on the coast. The chief centres of activity are the Crowsnest coal mines, the metalliferous mines of East and West Kootenay—of which Moyie, Ainsworth, Slocan, Sandon, Nelson, and Rossland are important centres—and the Boundary district, including Grand

properties. The mining laws include a "Placer Mining Act," "Mineral Act," "Inspection of Metalliferous Mines Act," "Coal Mines Act," "Coal Mines Regulation Act," etc., and full information respecting miners' certificates, the mining law and regulations, mining reports and maps, etc., may be obtained on application to the Provincial Department of Mines, Victoria, British Columbia.

A press despatch from Ottawa states that a case involving a charge of discrimination by the railways against eastern ore smelters in favor of those of British Columbia, was recently heard by the Dominion Railway Board. It is said to have arisen out of an application by the North America Smelting Co., of Kingston, Ontario, for a reduction in the rates on lead and silver-lead ores from British Columbia to Ontario. It was stated on behalf of the Kingston works that the Canadian Pacific Railway, by charging a lower rate on refined lead and silver from the West

MINERAL PRODUCTION

British Columbia has an area of 355,835 sq. miles; its population in 1911 was 392,480. The following table shows its mineral production in 1911 and 1912:

	1911		1912	
	Quantity	Value	Quantity	Value
Copper	Lbs. 35,279,558	\$ 4,366,198	50,526,656	\$8,256,561
Gold	Oz. 238,496	4,930,145	251,815	5,205,485
Lead	Lb. 23,784,969	827,717	35,763,476	1,597,554
Silver	Oz. 1,887,147	1,005,924	2,651,002	1,612,737
Zinc Ore	Tons 2,590	101,072	6,405	211,399
Coal	Tons 2,542,532	7,945,413	3,208,997	10,028,116
Gypsum	Tons 780	1,875	.....	.....
Mineral water .....	.....	3,500	.....	4,200
Cement	Bbl. 401,000	601,500	511,539	767,038
Clay products .....	.....	675,505	.....	996,568
Lime	Bush. 351,014	117,756	517,329	181,905
Sand-lime brick	No. 2,953,072	23,889	5,458,412	49,515
Stone .....	.....	698,811	.....	779,611
Other Products .....	.....	.....	.....	385,946
		\$21,299,305		\$30,076,635

Forks, Phoenix, Greenwood and Hedley; Britannia Beach and Texada island, on the coast, and Nanaimo and Comox on Vancouver island. The Portland Canal district has recently assumed considerable importance.

"Much prospecting and development is being undertaken at many points on or near the coast, while the construction of the Grand Trunk Pacific railway will provide easy access to a number of districts in that portion of the interior which it traverses.

"Important smelting industries have been established at Nelson, Trail, Grand Forks, Greenwood, in the southern interior, and at Ladysmith on the coast, the fuel for which is provided by the coal mines of Comox, the Crowsnest, or of Alberta. A new copper smelting plant will be in operation at Anyox or Granby bay, in December, 1913.

"Mining locations are granted under the laws of the province to discoverers, for nominal fees, and absolute titles may be obtained by developing such

makes it impossible for owners of reduction works in the East to compete with the lead smelting and refining works at Trail, B.C. The Board will not give a decision in the matter until after owners of works in the West shall have had an opportunity to state their side of the case.

The Spokesman-Review has stated that notice was posted on the Spokane stock exchange bulletins announcing that the Consolidated Mining and Smelting Co., of Canada, one of the largest operating corporations in British Columbia, had declared a dividend of \$2 a share, payable September 30, on the issued capitalization of 55,500 \$100 shares. The amount of the dividend is \$111,000 and brings the total disbursements of the company since profit payments were inaugurated up to \$1,125,961. The last dividend declared by the company was on October 1, 1912, when \$4 a share was distributed to stockholders. It is expected there will be another declaration before the current year ends.

Provincial Mining News

Written for the B.C. Mining Exchange
by E. JACOBS

EAST KOOTENAY.

The Prospector, Cranbrook, says: A. J. Miller, when in Cranbrook lately, reported that a strike of ore containing galena and grey copper was made recently on Findlay creek. Six claims have been located, and the surface showings indicate the ledge to have a width of about 30 ft. P. G. Duval, R. McNarh, J. Clements, J. Irvine, B. Rondeau and A. J. Miller, are the locators of the claims, which are situated on the south side of Findlay creek, six miles west of where it enters Kootenay river. As these properties are all situated in what has been known as the copper belt, a number of prospectors have left here for the new find.

The Moyie correspondent of the Daily News, Nelson, wrote on Sept. 14: There has been considerable excitement here this week owing to the fact that a body of ore rich in silver has been struck in the west drift of the Society Girl mine. This body of ore is 1 ft. wide and 15 ft. long, and as similar ore has been found in the stope 40 ft. above the drift there is every prospect that the mine will be shipping ore in paying quantities in the near future. This group of claims was located by C. C. Farrell and brothers some 16 years ago and since then the property has been worked extensively. A stock company of local men secured the mine some six years ago, but Mr. Farrell still holds a controlling interest in the mine. That company has shipped \$10,000 worth of ore and although it has met with varying success it has never lost faith in the mine, and this recent find is giving general satisfaction. The Society Girl mine is situated 3½ miles from Moyie, and there is a good wagon road all the way to it.

Ainsworth.

At the end of the month Judge Forin, on application of James H. Grant, in the suit of Green Bros. & Burden vs. Maxwell Stevenson of Philadelphia, ordered the sale of the Grant and General claims at Ainsworth. The action is for some \$150 for surveying fees.

Two of the mines in Ainsworth camp shipped ore to Trail during September, namely No. 1 and Silver Hoard. Work was also done on other properties. The Bluebell, across Kootenay lake from Ainsworth, continued to mine and concentrate ore; its shipments made a larger total for the month than those of any other mine in Ainsworth mining division.

Duncan River District.

The Kootenalan, Kaslo, has published the following request for information: In order to secure data to show that the expenditure of Federal money upon the opening of the Duncan river to navigation is justified, all owners of mineral claims and holders of timber along the Upper Duncan are requested to communicate at once with H. W. Power, secretary of the Kaslo Board of Trade, giving accurate statements regarding their properties.

Last month the same newspaper printed the following news concerning mining in the Duncan district: A new strike has

been made on the Wagner group by Cutler T. Porter, who has been conducting prospecting operations this summer by means of sluicing. No particulars are obtainable at the present time regarding the nature of the new find, but it is believed to be a big one. Mr. Porter having gone to Spokane to look up some of the mining men there to come and take a look at it. A test shipment of ore, amounting to about 30 sacks, was brought down from the Red Elephant mine, on Hall creek, the shipment being made by J. W. Power and Hugh McKay, the owners of the property. This shipment will be cut into three lots, one to go to the State College, Pullman, Washington, and the others to separate smelters, for testing, the idea being to discover the best method of treating the ore. This season's work on the property has developed nothing new. A cross-cut was started to open a ledge running parallel with the one upon which some development work has already been done, but work had to be abandoned before the ledge was cut on account of the supply of powder having run short. It cost \$30 to get the 30 sacks of ore from Hall creek to Howser, the nearest railway station, and it was conveyed by pack train, launch and wagon in making the trip.

Lardeau River.

At the end of August Mr. H. C. Buschner closed a visit of several weeks he had been paying to the scene of operations on Lardeau river for the recovery of gold by dredging. He is stated to be the owner of a dredge with which work has been done during the summer. He is reported by the Kaslo correspondent of the Daily News to have said: "I have had time to look thoroughly into the placer ventures on the Lardeau river and I am well satisfied. I have had one of the hardest-headed placer mining specialists I know of come from Colorado to examine the proposition, and have examined it myself, and I am prepared now to spend more money on it. I find it necessary to increase the plant slightly; all the machinery now on the lease is up to date."

Asked what the gold has produced to the yard of gravel, Mr. Buschner said: "From 87 cents up, and it pays well at 12 cents. But there are by-products which I intend to save. We get silver and arsenical iron too. By the end of October our new machinery will be here and then we will employ about 14 men."

Mr. Buschner displayed three bottles of gold. One was flour gold which, he said, they were able to save. The other two were coarser gold from off the plate. These he affirmed came off the claims near Gold Hill. Stillman H. Connor is the superintendent in charge of the work.

Kaslo.

The following information relative to the marble quarry situated along the railway from Lardo, at the head of Kootenay lake, to Gerrard, at the foot of Trout lake, has been sent out by a Kaslo correspondent: There has been upward of \$500,000 spent in the development of the property of the Canadian Marble Works at Marh-le-head up to the present time, and the indications are calculated to inspire confidence in the ultimate success of the venture. At present the work is being carried on in a conservative manner with a force of about 10 men.

Large week four huge blocks of marble were taken out. These are almost perfect blocks, the largest measuring well over 100 cu. ft. This product in the rough is worth \$2 per ft. and when sawn for ornamental building purposes brings \$10 per cu. ft. The tunnel where the quarrying is being done is so large as to receive its lighting from the daylight, and is about 30 ft. wide, 20 ft. high and has been driven straight in about 60 ft. The product now encountered is said to be the best produced as yet, from its comparative freedom from "heads" or seams, which may or may not prove serious imperfections when the marble is sawn. A drill hole driven down almost perpendicularly to a depth of 140 ft. shows the marble deposit to be sound and good to that depth. The whole situation is said to be most encouraging and gives good hopes that a permanent industry will result from the work. The industry is financed by Winnipeg capitalists.

Whitewater and Vicinity.

Development of the Whitewater group is being continued by the owners, J. R. Retallack & Co., who are as well mining ore from another part of the property and during September sent out nearly 200 tons.

Mr. E. R. Davidson, of Spokane, manager for the Eagle Lode Mining Co., has been at the company's Eureka group, a few miles east of Whitewater. A Kaslo news item states that he has let a contract to a number of American miners to drive an adit 1,000 ft. in length. Mr. Davidson admitted that the money stringency had caused him some anxiety while endeavoring to continue the work on the scale he intended, but he got all he needed in Spokane. He expects to get ore when the distance of 1,000 ft. shall have been driven.

McGuigan.

At a meeting of directors of the Rambler-Cariboo Mines, Ltd., operating the Rambler-Cariboo silver-lead mine in McGuigan basin and a concentrating mill on Seaton creek, Slocan, held in Spokane, Washington, on Sept. 10, reports received from the company's mine manager were submitted. These indicated that on the whole conditions at the mine were more encouraging. According to President A. F. McLaine, the company has been making profits of more than \$10,000 a month clear, with prospects of still better results shortly.

Sandon and Cody.

The Nelson Daily News gives the following news concerning mines in the neighborhood of Sandon and Cody:

"Mining conditions in the vicinity of Sandon were seldom more promising than at the present time, according to Bruce White, who has returned from a trip to that part of Slocan district. Instructions have been given by Mr. F. D. Little, representing Hon. James Dunsmuir of Victoria, for driving a long tunnel to cut the ore on the Noble Five group at depth. This tunnel will reach the ore, it is estimated at a depth of about 2,000 ft. T. L. McAllister is in charge of the property. Fine ore has been struck in the Surprise mine at a depth of about 1,000 ft. where from 2 to 4 ft. of clean ore has been opened. The Wonderful, owned by Clarence Cunningham, is looking well. The

Slocan Star mine has struck ore in the eighth level. Intermediate levels are being driven from the raise from the long tunnel on No. 12 level. Success is being achieved in tracing the ore from No. 6 level downward. From the Noonday, in which he is interested, Mr. White brought down some samples of excellent ore for exhibit by the Nelson board of trade. Good progress is being made at the Payne mine, where a deep level tunnel is being driven."

The Spokane News Bureau a few weeks ago sent out the following statement: For a consideration of more than \$100,000—the exact figure is not announced—Clarence Cunningham of Alaska coal land fame has purchased the Wonderful and Miller creek mines in Sandon camp, Slocan. The principal stockholders in the property were W. C. Jones, L. L. Rand and the Armstrong estate, all of Spokane; United States Senator Swanson of Virginia, and Congressman Brundidge of Arkansas. Mr. Jones was the largest Spokane stockholder. The Wonderful and Miller creek are high-grade galena mines, and have been worked by Patrick Clark and the late A. B. Campbell, of Spokane. The orebodies were located in 1892 and it was in that year that Mr. Campbell became interested. In 1893 Mr. Clark obtained control and in 1895 the Spokane men lately identified with the property took charge. In the first six weeks of operations following more than \$60,000 worth of ore was taken out. Mr. Cunningham has been in Spokane for some time negotiating with the stockholders. Whether or not he represents other interests has not been given out.

Vicinity of Slocan Lake.

Van-Roi Mining Co's report for August: The company's managers in British Columbia cabled the following report for August to the Van-Roi Mining Co., Ltd., London:

Estimated expenditure for August: Development \$2,550; capital expenditure \$174.

Exploratory Raise, Main Vein, Level 9: Position 216 ft. west of Stope 1, Level 9. Height of back 80 ft., above level 9. Advance 50 ft. of which 36 ft. averaged 18 oz. silver, 1 per cent. lead, 13 per cent. zinc, across an average width of 24 in.

"Crosscut Northwards, Level 9—1,500 ft. west of portal. Advance 11 ft. Ore has been penetrated averaging 12 oz. silver, 11 per cent. lead, 11 per cent. zinc, across an average width of 3 inches.

"Crosscut Southwards, Level 9—1,500 ft. west of portal—Advance 10 ft. Ore has been penetrated averaging 12 oz. silver, 11.5 per cent. lead, 16 per cent. zinc, across an average width of 33 inches.

"Crosscut Northwards, Level 9—860 ft. west of portal—Advance 10 ft. Ore has been penetrated averaging 2 oz. 10 dwt. silver, nil lead, 16 per cent. zinc, across an average width of 12 inches.

"Mill will be ready to start tomorrow."

The New Denver correspondent of the Daily News, writing late in August, gave the following news of mines situated within a few miles of Silverton:

Although the Van Roi mill has been closed for some time the company has been diamond-drilling for new orebodies and it is reported that a 3-ft. vein has

been struck and the prospects are good for mining being resumed before the end of the year.

On the Lucky Thought, formerly the Torpedo, upon which the Consolidated Mining and Smelting Co. of Canada has a \$75,000 option, a tunnel is being driven to get under the ore shoot. The orebody has been encountered about 25 ft. sooner than was expected, and the showing is reported to be good.

The L. H. group, operated by the British Columbia Copper Co., is reported to be looking well and the company will probably be shipping ore from there soon.

At the Standard mine a tunnel is being driven to strike the orebody about 700 ft. lower than No. 6 tunnel, now being worked. It is said the company has eight years' ore in sight.

The Hewitt mine is looking well. The company is driving No. 8 tunnel and pushing forward development work rapidly. A reduction plant with a capacity of 150 tons a day has been erected. It has the Minerals Separation process, from which good results are expected. It is claimed that by this process not only is a large saving effected in the cost of the plant, but 20 per cent. more of the mineral contents of copper, lead, silver and zinc ores can be secured than by the ordinary wet process of concentration.

On September 4 the Slocan Record, New Denver, published the following mining news from Slocan City mining division:

Ten-Mile Creek—Joe Franz is showing fine specimens of silver ore from the Belmont claim.

Geo. Bartlett, from Nelson, is working on his claim the Dunlea.

James Malley has struck some good-looking ore on the Wallace claim at the head of the creek.

Jesse Tipping and Pat McGuire have been doing development work on the Royal group. They report a large showing of silver-lead ore.

The Eastmont mine is again shipping ore. Four ore-sorters are employed. Ralph Gillett has a lease on the old dumps and is "making it pay."

Geo. B. Webster, the lessee of the Neepawa, has several miners employed and has a substantial showing of good ore in the raise recently completed.

Springer Creek—John Wafer and W. Jamieson are developing the old Cripplestick claim on Robertson creek.

Nat Tucker is developing the Oversight claim adjoining the Silver Leaf claim in the Arlington basin.

Bert O'Neil has taken out some remarkably fine ore on Mammoth claim in the Bondholder basin.

John Moen, lessee of the Black Prince, is now taking out some high-grade ore and will shortly make a shipment.

Some good-looking milling ore has been struck in the big vein on the Transfer group, by Chas. Barber and partners.

Robt. Cooper has a substantial showing of high-grade gold-silver ore on the Duplex claim near the Howard Fraction group.

Wm. R. Clement and M. Maurier are working the Morning Star claim, opposite the mouth of Dayton creek. They

have several tons of high-grade gold ore on the dump.

Conditions look cheerful around the Ottawa mine. The Consolidated Mining and Smelting Co. has 18 men employed doing work preliminary to substantial development. Considerable rich ore is being found in the dumps and old workings.

Barite, heavy spar, or sulphate of barium occurs in large amounts at the Calumet-Hecla group of claims at the head of Dayton Creek, also at Myrtle claim on the north side of Springer creek, and in smaller quantities at several other claims in the district.

The Provincial Bureau of Mines has collected upwards of 150 specimens of the dry ores of gold and silver occurring in the Slocan City mining division. The specimens are for permanent exhibitions at places where they are likely to attract the attention of mining men, capitalists and mining corporations.

Other Slocan Lake Notes.

Ore is reported in the faces of two of the tunnels now being driven in the Van Roi, near Silverton.

R. B. Kirk, of Vancouver, is now foreman at the Lucky Thought group, on Four-Mile creek.

The lead of rich dry ore in the Apex, near New Denver, continues as the shaft is sunk. It is about 18 inches in width.

John Wafer, one of the lessees of the Meteor, near Slocan, has gone on a visit to Quebec, after nearly 30 years' absence from the old home.

A 5-ft. vein is reported from the Ottawa, near Slocan City, owned by the Canadian Consolidated Mining and Smelting Co. No definite information has been obtained in regard to it.

On the Neepawa, Ten-Mile creek, stopping is being done on an 18-inch vein, between levels 3 and 4. The ore averages about 100 oz. in silver per ton. Shipments will be commenced this month to the Trail smelter.

Shipments from the Standard mine, near Silverton, during August were about 1100; of this between 400 and 500 tons was mill product, and the rest clean ore shipped direct from the mine.

Messrs. Oscar Lachmund, Frederick Keffer and Harry Johns, officials of the British Columbia Copper Co., spent Sept. 14 inspecting the L. H. gold mine, which is being developed by that company. Progress of work at the mine is steady and is rapidly demonstrating the permanent continuation of the large orebodies. The L. H. is on the mountain range south of Silverton.

Mr. Scott, manager of the Eastmont mine, hired a horse and rig for the season to haul supplies from the wharf at Ten-Mile, and had loaded his supplies and was starting the horse up the road when it became balky, backed off the wharf into the deep waters of the Slocan lake. The horse was drowned and wagon and supplies lost. The accident will cost Mr. Scott about \$300.

Pingston Creek.

The Halcyon correspondent of the Nelson Daily News gives the following information about the occurrence of zinc ore, situated on the opposite side of Arrow lake from Halcyon and several miles up

Pingston creek from the lake: J. C. Wilson of Spokane, representing the Federal Mining Co., recently went to Nakusp to make arrangements with A. M. Symon for an examination of the zinc ore ledge on Pingston creek. This is an immense body of ore, 250 ft. wide in places, and outcrops on 13 consecutive claims and for half that distance one can walk on mineral. There is a wagon road from the Canadian Pacific Lumber company's sawmill, at the mouth of Pingston creek, to the claims, a distance of seven miles. The best claims on the ledge are owned by Mr. Symon and associates. The ore contains some silver, but this will only be a by-product. Mr. Wilson says there is now more capital looking for investment in legitimate mining enterprises than for many years, and this part of the country is coming in for a large share of attention.

Nelson.

Except where otherwise stated, the following news relating to mining in the vicinity of Nelson has been taken from the Daily News:

At the Spokane Interstate fair the Silver King mine, near Nelson, has taken first prize for copper-silver ore and the Perrier mine, also near Nelson, has been awarded first honors for gold ore.

The success of Mr. E. Dedolph's plans for electrical smelting of zinc and mixed zinc and silver-lead ores by electricity means a very great deal for this section, says the Kootenaiian. Mr. Dedolph's plan looks promising because he is not banging any cymbals or beating the big drum about it. Here's success to it.

At a well attended meeting of the creditors of the Kootenay Gold Mines, Limited, in Nelson, very hopeful opinions were expressed as to the possibility of realizing upon the company's assets in such a way that neither creditors nor shareholders will suffer. The appointment of E. K. Beeston as liquidator was confirmed by the creditors.

Declaring that the problem of the treatment of complex zinc ores had been solved and that he was willing to demonstrate the process, F. B. Allan of Toronto, has written to the Nelson board of trade. The process of which he writes will save all the metals in the ore, he declares in a letter read at the meeting of the board, at a cost of about \$2 per ton. He suggests that from \$15,000 to \$20,000 he raised to erect a plant on a commercial basis. The secretary was instructed to take the matter up with the British Columbia Mining Association.

Matters connected with mining had a fair share of attention at the Nelson exhibition, held during September. In its notes on the exhibits, the Daily News included this reference to an exhibit from Trail: From Trail came a splendid exhibit of farm and garden produce and a great display of the products of the Consolidated Mining and Smelting Co.'s smelter and refinery. Two solid bars of silver, valued at \$1,700 were included in this exhibit. There was also silver slime, sheet lead, pig lead, pig bullion, lead pipe, cathode lead, anode lead, babbitt metal and bluestone. For permission to bring to Nelson this display the management of the fair is indebted to R. H. Stewart, general manager of the Consolidated Mining and Smelting Company, who authorized Rich-

ard Truswell, foreman of the refinery, to take charge of it here.

Concerning the rock drilling contest, the Daily News said: "Johnson and Erickson of Silverton provided the sensation of the rock-drilling programme by drilling 44 in. which is a new record for a similar kind of rock in this city. Carmichael & Tinney of Silverton, also gave an excellent exhibition, making 42½ in. Nyberg & Clare of Rossland drilled 33 in., but were handicapped by having to perform in artificial light. Money prizes were offered: First, \$250; second, \$75; third, \$25."

Ymir.

The Old Timer group of claims situated on the north fork of Wild Horse creek, four miles above the Ymir mine, has been bonded to William A. Buchanan, superintendent of the Yankee Girl mine, for a consideration of \$45,000. The group comprises the Old Timer, Old Timer fraction, Bearing Gold and Free Milling mineral claims, and is owned by R. S. Shrum, E. M. Peters, Charles Desrosiers and W. C. Forrester.

A new strike of ore at the Yankee Girl mine near Ymir is reported to the Nelson Daily News by Edward Peters who recently visited at camp. This orebody was encountered by following the advice of Arthur Lakes, who has charge of the Wilcox mine. The ore that has been shipped lately from the Yankee Girl has been running \$40 to \$50 per ton, according to information secured by Mr. Peters.

He stated that the Dundee mine, adjoining the Yankee Girl, is making good progress and under the superintendence of B. H. Washburn ore of good grade has been encountered in the deep workings of this property. Mr. Washburn has erected additional mine buildings, including an assay office and a living house, and now has his family with him at the mine.

The Wilcox mine, on Wild Horse creek, near Ymir, has recently encountered the orebody at the 800 ft. level the values being high, in fact even better than at any surface showing of this mine.

At the Sterling mine, near Ymir, owned by Phil White of Vancouver, has been encountered a vein about 20 ft. wide of milling ore, with a high-grade oreshoot about 3 ft. in width. Mr. White is jubilant over the new strike and last week left for the coast to pay his family a visit and in all likelihood make arrangements for machinery and more extensive development.

Thomas Wilkinson and Joseph Kileci have started operations on their property adjoining the Sterling, close to the C.P.R. group.

A consolidation of the C.P.R. group and other properties, taking in an area of 25 claims, has been made through the British Columbia Mining Exchange Agencies.

Salmo and Sheep Creek.

George E. Farish of New York has secured an option on the Queen mine at Sheep Creek. For two weeks with a staff of seven men he has been engaged in making a thorough examination of the property. He expects to be in a position about the beginning of October to state whether he will exercise the option, which does not expire until October 31. He is acting for himself and eastern associates.

Wisconsin men own the mine, which they have operated for several years.

Six feet of ore, containing galena of a good grade has been struck on claims of the H. B. group at Deer creek, and the owners of the property propose to resume shipments during the coming winter, states W. G. Burnham. Neil McColeman is packing supplies to the Bunker Hill, a galena property in which he is interested, with a view to developing the property, said Mr. Burnham, who also stated that Al Garvin and his partner Westby were taking supplies to their property with a view to commencing operations, and that W. B. Pool was doing assessment work on claims at the head of Deer Creek.

An amalgamation has been arranged which brings into one company three groups of mines in the Sheep creek district, the Golden Fawn, Victoria and Mountaineer groups. This was brought about by the British Columbia Mining Exchange, and the new concern will go by the name of Golden Fawn. It will be composed of sixteen claims, instead of four, as formerly. The property adjoins the Nugget mine, near Salmo, and extends almost to the head of Hidden and Sheep creeks. According to E. Peters, five veins have been discovered in this area that will pan free gold, assaying as high as \$316. Water power and timber are plentiful. Those interested are W. G. Burnham, George H. Colwell, J. J. Malone, William Gosnell and E. Peters, of Nelson; C. E. Bennett and Thomas Gallon, of Victoria, and F. P. Drummond, of New York.

The Spokesman-Review, Spokane Washington, says: The labor troubles in the Ymir district, in British Columbia, which began several months ago, practically are settled, according to W. S. DeWitt, mill superintendent for the Queen Mining company for the last six years, who has been visiting his family in Spokane.

"All the mines in the district, with the exception of the Queen, are operating as usual, and none of them but the Mother Lode and Yankee Girl are paying any higher wages than before the strike. Those two are paying 25 cents a day more than the regular scale because of peculiar conditions existing in the mines, and not because of the strike. The walk-out at the Queen took place last February. We do not desire to fight the Ymir Miners' Union nor any other union, but are anxious to make a public protest against the manner in which the affairs of the union have been and are being carried on by some of the officials of that organization. We are all union men, although I personally, because of my position as foreman, can not, under the rules of the union, take an active part in the affairs of the organization. I have been asked also to make it clear that the men at the Queen mine who were called out would have been willing to join any general demand for a \$4 scale. Their objection is that the men at the Queen mine only were called out and that without the instructions of the union executive board."

Trail.

In its report of the Trail exhibition, the Rossland Miner said: One of the points of greatest attraction was the exhibit by the Canadian Consolidated Mining and Smelting Co. of Canada, Ltd. Occupying a splendid position between the two entrances, this remarkable display attract-

ed the attention of all who entered the building, and was described by mining men as one of the finest exhibits of its kind made on the continent. It was in charge of R. Truswell, who obligingly explained methods and results to scores of inquirers.

The Nelson Daily News also referred to the exhibit as follows: The interior of the building was very tastefully arranged. Upon entering the building the first object that met the eye was the huge display of the Consolidated Mining and Smelting Co. Here samples of ores from Kootenay mines were exhibited, as well as the products manufactured at the company's refinery, which included 10 silver bars worth in the vicinity of \$8,000.

Ore receipts at the Consolidated Mining and Smelting Co's works at Trail during four weeks ended Sept. 25, were as under:

East Kootenay	Tons	Tons
Monarch	35	
St. Eugene	116	
Sullivan	2,628	
		2,779
Ainsworth—		
Bluebell	630	
No. 1	385	
Panama	70	
Retallack & Co.	173	
Silver Hoard	235	
Utica	13	
		1,506
Slocan—		
Eastmont	32	
Hewitt	232	
Mountain Con	16	
Rambler-Cariboo	300	
Reco	8	
Richmond-Eureka	116	
Ruth	39	
Slocan Star	60	
Standard	934	
Surprise	20	
		1,757
Nelson—		
Emerald	144	
Molly Gibson	174	
Queen	40	
Silver King	257	
Yankee Girl	326	
		941
Rossland—		
Centre Star Group	13,083	
Le Roi	5,499	
Josie (Le Roi No. 2 Ltd)	1,847	
		20,429
Lardeau—		
Ferguson		37
Kamloops—		
Iron Mask		32
State of Washington, U.S.A.—		
Ben Hur (Republic Camp)	1,744	
Bonanza	101	
United Copper	47	
		1,892
Total		29,373

Rossland.

Rumors having been persistently circulated at Rossland of a rich strike on the Richmond Consolidated property, in the South Belt, Mine Manager J. L. Warner, when asked about it by the Miner, said that the reports were much exaggerated.

A vein from five to six feet wide had been struck at the 200 ft. level containing ore of a good shipping grade.

On September 20 the Miner printed the following: P. A. O'Farrell was in Rossland during the past week. He spent most of the time going through the mines, and also paid a visit to the smelter and refinery at Trail. To the Miner he said:

"I never felt so confident and so enthusiastic about Rossland and its mining possibilities as I do today. Only two or three mines, so far, have been exploited and put into the producing stage, and in the past 16 or 17 years these few mines have produced \$50,000,000 in gold and \$10,000,000 in copper. The monthly payroll at the mines and smelter is more than \$100,000, and all this production has come from 150 acres of mining ground.

"I saw the big ore shoot in the War Eagle, where it is 600 ft. long and 30 ft. wide. Here this mine which has produced millions in gold, is bigger and richer than ever.

"I am going to tell the people East and in Europe to come to Rossland if they wish to see a great gold mine. I shall add that at Trail they will find in operation as well-equipped and up-to-date a smeltery and refinery as any on the continent."

Boundary.

A press dispatch states that work is progressing rapidly at Carmi. Steel is laid 20 miles between Carmi and the summit and the track is ballasted for 13 miles between those places. At present there are only about 25 men working at Carmi, and the bridge at Wolf creek, where 20 men are working, is nearly completed. It is reported that the roundhouse will be at Beaverdell. Work on the Sally mine is expected to be commenced shortly.

From the Phoenix Pioneer it is learned that on the last pay day at the Granby Co's mines about \$81,000 was paid out to the miners. It is estimated that there are upward of 800 men working in and around Phoenix at the present time. Of this number 500 are at the Granby, 200 at the Rawhide and between 150 and 200 at the Gold Drop. Three trainloads of ore are taken every day from the mines at Phoenix and shipped to the smelter at Grand Forks to be treated.

To mark their approval of the efficient work done by the Mother Lode mine staff and miners, in connection with the recent successful blast, when 24½ tons of dynamite was exploded, says the Greenwood Ledge, the management of the British Columbia Copper Co. entertained the Mother Lode men and their friends at an enjoyable smoker, given in the dining room at the mine. Among those present were a number of friends of the men and management from Phoenix and Grand Forks.

A Greenwood dispatch to the Daily News states that the mill of the Jewel-Denaro Mines, Limited, has been remodelled recently and it is now working satisfactorily to the management. It took some time to put the mill in shape to treat this particular grade of ore, which contains both gold and silver. The mill equipment includes 15 stamps, a 16 ft. tube mill, vanners, slime settlers, tall tank agitators and Moore slime filters. At the mine and mill 40 men are employed, and

some 1400 tons of ore is handled every month. The company has outlined a plan for doing considerable development, which it is confidently expected will open some new orebodies, even larger than those being worked at present. The shaft, which is down 330 ft., will be sunk much deeper.

The Spokesman-Review, Spokane Washington, said recently: Advices from New York state that the preliminary report of the Granby Consolidated for the fiscal year ended June 30, 1913, shows that profits from the Phoenix mines and the Grand Forks smelter amount to \$1,207,661, of which the sum of \$449,955 was disbursed to shareholders since dividend payments were resumed recently. These figures are subject to minor corrections by the final statement to be submitted at the annual stockholders' meeting, October 7. The earnings for July and August will show some shrinkage, due to low copper prices, and somewhat smaller recoveries, but the total for the year will reach approximately \$1,250,000, it is believed, as compared with \$1,600,000 for the previous fiscal year.

The British Columbia Copper Co., which controls the New Dominion Copper Co. through stock ownership, was the largest single beneficiary as a result of the announcement made that the New Dominion Copper Co. would, on September 1, meet the income bond interest due on coupon No. 4, provided stockholders are willing to forego payment of coupons 1, 2 and 3. It was the first distribution of any kind to security holders since the last reorganization of the New Dominion, that started its career as the Montreal & Boston Mining Co. The British Columbia Copper Co. has been accumulating and purchasing New Dominion bonds whenever possible during the past year or two. On the \$499,800 10-year 6 per cent. convertible bonds the above mentioned interest payment will require \$29,988. During its fiscal year ended March 31, the New Dominion Co. for the first time operated at a profit, which approximated \$119,000.

Hedley.

A rock-drilling match between two local miners took place recently at the Nickel Plate mine. Each driller had a man to turn his steel for him, and the time limit was 12 minutes. Jack Trewelah won with a hole drilled 26 7-16 inches, against that of his opponent, W. Liddicoat, who only managed to drill 22 5-16 inches.

Recently the Hedley Gazette said: "For the third time in 1913 the Hedley Gold Mining Co. has announced a dividend of five per cent. quarterly on the outstanding stock of the company, representing a distribution of \$60,000 profits from the operation of the Nickel Plate mine for the last quarter. These profits now distributed for the quarter do not represent the entire profits earned during the last three months and available for distribution in dividends, but in merely the carrying out of the general policy of the company to distribute that amount quarterly. When the mine was taken over four years ago by the present owners, the board of directors, from data at hand, decided on a programme of three per cent. quarterly on the outstanding stock as being a dividend rate which would be easily maintained. Alterations in the milling plant, however, which permitted of a greater tonnage and

higher extraction, made the profits pile up at a rate which made it impossible for a quarterly three per cent. to relieve the congestion of dollars, and extras became an immediate necessity.

"All the while development has gone forward uninterruptedly, and at no time has it been more vigorously pushed than at the present. In addition to the regular development which in all mines must precede extraction, much of the present development being carried on will have to do with a distant future and will serve for operations in the mine many years hence; for a great highway for the ores of the future is now being prepared in the sinking of the Dixon incline which is to be driven down 3,000 ft. and has already attained a depth of about 600 ft. below its own portal.

"Another heavy expenditure which it was thought would have been under way at the present moment and for which provision had to be made was that of development of more power; but unfortunately that has been knocked on the head for this year, and months of valuable time lost for the camp, which has already waited too long for the necessary provision to work its deposits on a scale worthy of the properties themselves."

GENERAL NOTES.

The Rossland Miner states that a new strike has been made at the Black Bird mineral claim, situated about two miles from the Inland Empire mine and half a mile from the Columbia and Western railway from Castlegar to Boundary district. The orebody is five ft. in width and the ore assays \$29 per ton. The property is owned by Paulson Bros.

Geo. McCready was down from the Antoine basin, above McGuigan recently, says the Kaslo Kootenain. He is interested with another man in a lease of the old Antoine dumps and the venture is turning out satisfactorily. Mr. McCready was successful in dump picking at the Reco last year, cleaning up a neat little pile as the result of the season's work.

The Hedley Gazette observes: Coalmont has taken on fresh life and interest with the purchase of the Vancouver men, and the announcement is made that the development work will be prosecuted with more vigor than formerly and along lines better calculated to produce results. It is said that the townsite of Coalmont is included in the deal along with the coal properties. That in fact is the worst feature of the situation, for mining companies should be mining companies pure and simple, and where they begin dabbles in townsite they almost invariably invite failure by doing fool things from the mining point of view in order to boost the townsite.

The Nipissing Mines Co. has decided to hereafter ship its silver bullion from Cobalt, Ontario, to New York, instead of from Cobalt to London direct, as heretofore. This decision is the result of the recent advance in express charges on silver bullion from Cobalt to the British capital of \$2.50 per 100 lb., making the flat rate between the two points \$7 per 100 lb. The company has made several trial shipments of bullion to New York upon such favorable terms that it has been decided to ship all of its bullion to that city.

PERSONAL AND GENERAL

Movements and News of Prominent Mining Men



Written for the B. C. Mining
Exchange by E. JACOBS

Mr. Geo. H. Aylard, general manager for the Standard Silver-Lead Mining Co., operating the Standard mine and concentrating mill near Silverton, Slocan like, has been spending several weeks with his family at Victoria. While on the coast Mr. Aylard made a trip to Stewart, Portland canal.

Mr. Chas. A. Banks, manager of the Jewel-Denoro Gold Mines, Ltd., Long Lake camp, near Greenwood, Boundary district, has gone on a business trip to New York.

Mr. T. Walter Beam, who has been at Hedley, Similkameen, for some time, has on various occasions been guide for visitors hardy enough to undertake the trip from the Nickel Plate mine over the mountain and down the canyon in which diamond drilling is being done, under Mr. Beam's direction, for the New York Syndicate No. 2. The Gazette makes comment on the trip as one that is not by any means an easy one.

Mr. F. K. Beauchamp, representing the Minerals Separation Co. at the mill of the Silverton Mines, Ltd., on Four-Mile creek, Slocan Lake district, has returned to the mill after having been at the Halcyon hot springs for a time, taking baths there.

Mr. A. J. Becker, on his return to New Denver from a trip to Winnipeg, Manitoba, told the Slocan Record that Mr. G. Weaver Loper will again take an active interest in the affairs of the Lucky Jim Zinc Mines, Ltd., and that consequently development work will be resumed and provision be made for concentrating some of the ore from the Lucky Jim mine, at Bear Lake, Slocan.

Mr. W. J. Beckett, of Spokane, who is interested in mining properties in Ainsworth division, has been paying another visit to that part of West Kootenay.

Mr. T. W. Bingay, of Trail, comptroller for the Consolidated Mining and Smelting Co. of Canada, Ltd., was a delegate to the annual convention of the Associated Boards of Trade of Eastern British Columbia, held at Kaslo lately.

Mr. William Blakemore, of Victoria, has gone to the Flathead country, Southeast Kootenay, to examine oil and coal prospects there.

Mr. W. M. Brewer, of Victoria, after having spent some time in Bridge River section of Lillooet district, investigating mining conditions for the purpose of making a report on same to the Provincial Department of Mines, is now in the North Thompson country, obtaining information relative to mining prospects in that part of Kamloops mining division.

Mr. R. W. Brock, of Ottawa, Director of the Geological Survey of Canada, after having accompanied the International Geological Congress Excursion CS to Yukon and return, took charge of one division during a visit to Rossland, whence the party proceeded by the Crowsnest

route to Medicine Hat, where was re-joined the other division which, with Mr. R. G. McConnell in charge, had gone eastward by the C.P.R. main line. Mr. Brock paid another visit to Vancouver before returning to his headquarters in Ottawa.

Mr. Thos. Brown, of Nelson, visited Slocan mining camps to secure specimens of ore for exhibition at the Nelson fair, held in September.

Mr. G. O. Buchanan, of Kaslo, Supervisor of Lead Bounties, accompanied a provincial official party on a visit to the pass in recent years called Grey pass, from the country at the head of Kootenay lake over the mountain divide and down Toby creek into the valley of the Columbia near Wilmer. Afterward he took part in the convention of Associated Boards of Trade of Eastern British Columbia.

Mr. Frederick P. Burrall, of New York City, has been making investigations in the White River country, Yukon Territory, and across the International Boundary line in Alaska, for the company operating the White Pass & Yukon Route railway and steamer line. The company is reported to be considering the advisability of extending its transportation connections up the White river, so as to be in a position to secure a good share of the business with the Chisana or Shushanna gold field.

Mr. Chas. Camsell, of the Geological Survey of Canada, after leaving one of the International Geological Congress Excursion parties, with which he travelled for several weeks, proceeded to Camp Hedley and spent a few days there bringing up to date his information relative to geological conditions underground in the Nickel Plate group of mines, as shown by later development at lower levels. He expected to also visit Copper Mountain camp, near Princeton, and the upper Tulameen district, before leaving the Similkameen.

On July 22, in London, England, a general meeting ratified the proposals for the organization of a Royal School of Mines Association. Among the speakers in favor of the scheme was Mr. W. A. Carlyle, formerly Provincial Mineralogist for British Columbia, while the ratification resolution was moved by Mr. S. J. Speak, at one time manager in British Columbia for the Ymir Gold Mines, Ltd., and seconded by Mr. E. R. Woakes, at one time managing mines in Nelson mining division.

Mr. John Cartmel, formerly Gold Commissioner for Liard and Stikine mining divisions of Cassiar district, is now Provincial Government Agent, Gold Commissioner, etc., at Nelson, West Kootenay.

Mr. Cosmo T. Cartwright, of the Mines Branch of the Canada Department of Mines, Ottawa, has been in the province several weeks, obtaining addi-

tional information concerning the mining industry of British Columbia.

Mr. Eriera de Castro, a Portuguese mining engineer, recently accompanied Mr. W. E. Cory, of New York, formerly president of the United States Steel Corporation, now one of the larger shareholders in the Hedley Gold Mining Co., and Mr. J. B. Worden, of Philadelphia, on a visit to the Hedley Co.'s Nickel Plate gold mine and 40-stamp mill, in Camp Hedley, Similkameen.

Mr. E. Cave-Brown-Cave, of Vancouver, manager of the B. C. Assay and Chemical Supply, Ltd., has been making a tour of West Kootenay mining towns.

The Canadian Mining Institute during 1913 has gained in numbers of members resident in British Columbia. Those who have been elected this year are: Messrs. H. P. Archibald, Vancouver; Chas. A. Banks, Greenwood; E. Berryman, Voigt's Camp; G. J. A. Zuisson, Rossland; Henry Clark, Victoria; Chas. L. Copp, Lillooet; John Cunliffe, Vancouver; H. N. Freeman, Nanaimo; J. F. Fredin, Voigt's Camp; M. W. Garman, Nanaimo; Gwynne G. Gibbins, Vancouver; J. T. Hepburn, Nanaimo; Gomer P. Jones, Hedley; D. E. Keeley, Hosmer; Oscar Lachmund, Greenwood; Thos. J. Lloyd, Silverton; Jas. McKelvie, Hosmer; Jas. Rennie, Suquash, Vancouver Island; Paul Rochussen (Assoc.), Vancouver; Wm. Shaw, Hosmer; Chas. F. Sherwin, Riindel, Kootenay lake; Frank L. Smith, Nelson; Thos. A. Spruston, Bevan, North Cumberland, V. I.; Edward Willey, Fernie. The resignations of Messrs. Leslie Hill, Nelson, and A. C. Flumerfelt (Assoc.), Victoria, were accepted, and death necessitated the removal from the membership list of the names of Mr. Thos. A. Procter, Victoria, and Mr. Edward Willey, Fernie. Several applications for membership from British Columbia will be dealt with at the October meeting of the Council of the Institute.

Mr. E. E. Chipman, formerly Gold Commissioner for Ainsworth and Slokan districts, has returned to Kaslo from a somewhat lengthy visit to the East.

Mr. John P. Clarke B.A., a graduate of Queen's, Kingston, Ontario, while employed with a survey party in the Flathead country, Southeast Kootenay, was killed by a tree falling on him and crushing his skull.

Mr. Chas. H. Clapp, of the Geological Survey of Canada, left Victoria recently to proceed to Arizona, to commence his duties as professor of geology at the University of Arizona. Mr. Clapp's departure from British Columbia is a distinct loss to Vancouver Island, for during several years he has done much valuable geological work on the island. Fortunately his reports—those already published and others yet to be printed—will be available to those seeking knowledge of the geology of the parts of the island in which he has done much field work, but it is to be regretted that after he had become so familiar with local conditions the Survey should lose his valuable services while there is yet so much geological work to be done on the island. However, the

excellent beginning he has made will probably be followed up by good work by other geologists. Mr. Clapp's many friends on the island wish him abundant success in his new sphere of work.

Mr. Paul S. Couldrey, at one time manager of the mines of Le Roi No. 2, Ltd., Rossland, and later superintendent of the British Columbia Copper Co.'s Mother Lode mine, near Greenwood, Boundary district, is taking a holiday in France. He is now superintendent of the Cerro de Pasco Co.'s mines in Peru, having gone to that country from British Columbia several years ago.

Mr. W. C. Dalglish, of Paterson, New Jersey, who for years has been interested in a mining property near Slokan City, lately visited the claim and arranged for more work to be done on it.

Mr. E. R. Davidson, manager of the Eagle Lode Mining Co., of Spokane, Washington, when in the district recently let a contract for tunnel driving on the company's Eureka group, near Sproules, Ainsworth mining division.

Mr. W. J. Dick, of Ottawa, mining engineer for the Canada Commission of Conservation, paid a short visit to his old home in Nanaimo at the end of August. When Mr. Dick graduated B.Sc. at McGill, Montreal, in 1908, he won the British Association Medal, which was quite a distinction. His father, Mr. Archibald Dick, of Nanaimo, was for many years senior Inspector of Mines for British Columbia.

Mr. R. G. Drinnan, the well known coal mining engineer, now makes Edmonton, Alberta, his headquarters instead of Vancouver, B. C., having charge of important coal properties in the former province.

Lord Denbigh and party recently paid a visit to the property in Alberni district, Vancouver Island, the Ptarmigan Mines Co. intends developing.

Dr. Chas. W. Drysdale, of the Geological Survey of Canada, and Mrs. Drysdale, have been receiving congratulations on the birth this month, at Rossland, of their first child—a girl.

Mr. Geo. E. Farish, formerly of New York, who was for some time manager for the Motherlode Sheep Creek Mining Co., recently returned to Nelson from Chicago. He has been reported to have examined the Queen gold mine at Sheep creek, Nelson mining division, on which he is stated to have secured a bond with option of purchase.

Mr. D. G. Forbes has been to Valdez and Texada islands, obtaining information relative to mines, for inclusion in a report to the Provincial Department of Mines.

Mr. H. Giegerich, merchant, of Kaslo, who is interested in a number of mining properties in Ainsworth mining division, has been re-elected vice-president of the Associated Boards of Trade of Eastern British Columbia.

Mr. W. S. Hawley, manager for the Silver Hoard Mining Co., has been continuing his activities in connection with the operation of the Silver Hoard mine, near Ainsworth. Equipment with more

power machinery and shaft-sinking to greater depth are included in the programme of progress mapped out. Ore receipts at Trail from this mine during four weeks ended September 25 totalled 235 tons, as compared with 96 tons during four weeks ended August 28.

Mr. C. S. Hurter, who some years ago was chief chemist in the Tyee Copper Co.'s laboratory at Ladysmith, V. I., called on Mr. Thos. Kiddie at the latter's home in Alhambra, California, a few weeks ago. Mr. Hurter is now explosive expert for the Dupont Powder Co.

Mr. H. W. C. Jackson is now in the Skeena district, writing about its mineral and other resources. Some years ago he was editor of the Rossland Miner; in later years he was mining editor for the Spokesman-Review, Spokane, Washington.

Mr. H. H. Johnson, formerly of Hoffmann & Johnson, London, England, now has his office in Victoria, where he is associated with the Ptarmigan Mines, Ltd.

The Rossland Miner says that Mr. and Mrs. W. E. Jones have arrived in Trail from Newport, Wales, where they have been living for the past couple of years. Mr. Jones was a resident of Trail in the early days, and later removed to Rossland, where he became master mechanic at the Centre Star mine. He has taken the position recently vacated by O. Stromberg in the engineering department at the Trail smelter. Mr. Stromberg has gone to Colorado.

Mr. Henry Kehoe, of Spokane, has been appointed engineer in charge of mining operations of the recently organized London-Arizona Consolidated Copper Co., in Pinal county, Arizona. Mr. Kehoe was for some time resident in Vancouver.

Mr. A. Klockmann, at one time resident in Rossland, is now president of the company owning the Idaho-Continental mine, situated 26 miles from Porthill, Idaho. Mr. Albert I. Goodell, who was manager of the Boundary Falls, Northport, and Sullivan group smelteries, successively, during several years connection with the metallurgy of British Columbia ores, is general manager for the Idaho-Continental company. Recently Mr. Klockmann told the "Spokesman-Review," Spokane, Washington, that Mr. Goodell, who has been in charge of construction and development for the last several weeks, reports that the concentrator and other buildings will be under roof soon. The equipment for the 300-ton concentrator at the mine and the power plant at Boundary creek, midway between the property and Porthill, is being installed and will be ready for a trial in a few weeks. The transmission line from the power station to the mine has been completed, and things are in such shape now that it is certain operations will be commenced not later than January 1, 1914. For the last several months efforts have been confined entirely to construction, but shortly a force of men will be at work underground, blocking out crude ore for shipment and milling ore for the concentrator. As soon as the machinery is adjusted and running smoothly the output of the mine will be

increased to the limit of concentrating and transportation resources. At first the output of ore will be only about 30 tons a day.

On September 20 The Engineering and Mining Journal, New York, included the following in its personal notes: Dr. A. P. Low, Deputy Minister of Mines of Canada, is to retire. The candidates for the place are R. W. Brock, at present Director of the Geological Survey; Dr. A. E. Barlow, and W. R. Askwith. Mr. Askwith is a well known mining engineer and represents the hopes of those who think that the Mines Department ought to be under a mining engineer. Messrs. Brock and Barlow are distinguished geologists and represent the Geological Branch. The appointment probably will be made in October.

Mr. Oscar Lachmund, general manager for the British Columbia Copper Co., recently occupied the chair at a smoker at the company's Mother Lode mine, near Greenwood, Boundary district, the occasion being a recognition of the excellent work done by the company's employees in connection with an enormous blast successfully fired in that mine. The employees at the company's several properties are being shown that a man can be a "good mixer" as well as a good general manager.

Prof. Arthur Lakes, of Denver, Colorado, who last year spent several months in Ymir district with his son, the manager of the Wilcox mine, was in England recently. It was characteristic of him that he contributed notes on what he saw, for publication in Old Country mining journals.

Mr. and Mrs. Thos. J. Lloyd now have a little daughter in their home near New Denver—a new arrival. Mr. Lloyd was for several years, until a few weeks ago, in charge of the underground work in the Van-Roi mine, situated about five miles from Silvertown, Slovan lake.

Mr. R. G. McConnell, of the Geological Survey of Canada, who was leader of International Geological Congress Excursions C8 and C9, the latter to Prince Rupert and Skeena River and the former to Malaspina and Yukon, returned to Vancouver with his party after their trip to the North, and then went over the Canadian Pacific railway eastward until the excursion was concluded and the party disbanded.

Mr. C. H. McDougall, superintendent of the Consolidated Mining and Smelting Co.'s St. Eugene and Sullivan lead-silver mines, in East Kootenay, has been ill in the hospital at Cranbrook. At last advices he was stated to be recovering.

Mr. James McEvoy, geologist and mining engineer, of Toronto, long actively engaged in Geological Survey work in the West and for some time geologist and chief engineer for the Crow's Nest Pass Coal Co., has recovered from his recent illness and returned to Toronto. While travelling to the Coast from Kootenay with one of the International Geological Congress Excursion parties, in the capacity of associate leader, he was taken ill with pneumonia. On arrival in Vancouver he was placed in one of the hospitals and there cared for until convalescent.

The Phoenix Pioneer printed the following: A telegram from Dan. Matheson,

superintendent of the Silver King mine at Nelson, has been received by Jas. Marshall, of the Brooklyn hotel, informing him of the death, by misadventure, of Jeff McEachern, a familiar figure among the miners of this camp. According to an account by eye-witnesses, McEachern was amusing himself trying to dislodge a squirrel that had climbed one of the poles sustaining the high-tension power lines. His companions repeatedly warned him of the danger he was running, but in spite of all advice and remonstrance, he procured an 18-ft. steel rod and attempted to reach the animal, with the awful result that the bar came into contact with the wire and diverted a current of 20,000 volts into his body. Immediate steps were taken by those near him to restore animation, but on the arrival of Dr. Hartin, he expressed the opinion that death had been instantaneous. The deceased miner, who was about 37 years of age, had spent many years in Boundary district. He came to British Columbia about 16 years ago from Wehsters Corners, Prince Edward Island, where he held a position as teacher in one of the schools there. The funeral took place at Nelson.

Mr. C. S. McLean, of the Geological Survey of Canada, arrived in Hedley from Ottawa early in September. The Gazette stated that he will be engaged in Camp Hedley for some time, making a triangulation survey and doing other topographical work required for some maps which the Survey is preparing for issue.

Mr. John McMartin, of Cobalt and Porcupine, Ontario, reached Vancouver early in September on his way to some of the mining camps to the northward. Later he returned and then proceeded to Sheep Creek camp, in Nelson mining division, where he is largely interested in the property of the Motherlode Sheep Creek Mining Co.

The Kootenayan stated lately that Mr. J. C. Moyle, of West Superior, Wisconsin, president of, and one of the largest shareholders in, the Utica Mines, Ltd., had been on a visit to Kaslo.

Mr. Fred Mummery, mining recorder at Trout Lake City, Lardeau, died in Nelson on the night of September 29. The Kootenayan states that he had been in ill health for some months and last May spent two weeks in the Kaslo hospital. His condition having improved, he returned to Trout Lake; recently, however, he decided to go to the hospital in Nelson, but after a short time there he died. He was an old-timer in Lardeau district, where he had many friends. His body was buried at Nelson.

Mr. Desaix B. Myers, of Los Angeles, California, has been examining the Emerald lead mining property, in the vicinity of Salmo, Nelson mining division. The mine is owned and operated by the Iron Mountain, Ltd., of which Mr. John Wald-beser is manager.

Mr. Horace G. Nichols, formerly manager of the Ymir Gold Mines, Ltd., and patentee of the Nichols slime process, has returned to London without having travelled as far west as British Columbia during his recent short stay in America.

Mr. L. W. Oughtred, assayer at the Consolidated Mining and Smelting Co.'s No. 1 mine, and Miss Jean McKinnon, also of Ainsworth, were married in Kaslo at the end of August.

Many mining men in British Columbia remember Mr. Wm. Pellew-Harvey, now of the firm of Pellew-Harvey & Co., mining engineers, London, but years ago at the head of a leading firm of assayers and chemists with headquarters in Vancouver. He has lately been at the Great Cobar mine, New South Wales, the general manager of the company owning which is Mr. H. C. Bellinger, a metallurgist also well known in this province. The Mining Magazine, London, for September has the following from one of its Australian correspondents: Mr. Pellew-Harvey, one of the directors of the Great Cobar, has been spending some time on the property. His coming was as quiet as that of a mouse; his doings as secret as those of the sand mole of the Australian desert. What he thought of the mine was not known till shares jumped, and then came the news that a good report had been dispatched to the directors. On this side of the world Mr. Pellew-Harvey's doings have been followed most intently. What has leaked out is that he has in his eye the reorganization of the staff. Word has gone round that the copper contents of the ore in the bottom of the mine have improved, and that the returns, with the aid of the flotation process, are on the mend. How far these rumors will be verified will be seen when Mr. Pellew-Harvey's report finds the light, but it must be confessed that people on this side do not build much on the optimistic expectations. The mine is being got into better trim underground, and it is certain now that the reports respecting the creep were exaggerated.

Mr. L. B. Reynolds has returned to Nelson after having spent some time in the Eastern States. While he was away news was received in British Columbia to the effect that he was seriously ill with fever in a hospital.

The Greenwood Ledge says: Alex. Robinson, who has purchased the Sally mine at Beaverdell, West Fork of Kettle river, was at one time editor of the Boundary Creek Times.

Mr. M. K. Rodgers was in Victoria lately. The Daily Times noticed his visit as follows: Mr. M. K. Rodgers, a well known mining engineer, to whose credit stands the first recognition of the large extent and value of the ore bodies of the Nickel Plate group of mines in Camp Hedley, Similkameen, and the Hidden Creek mines near Observatory Inlet, the latter now being developed by the Granby Consolidated Co., is in the city, on his way to Granby bay to see the progress recently made there at the mines, and in the erection and equipment of the company's 2,000-ton a day smelting works. The Nickel Plate group has already produced gold ore to the gross value of more than \$5,000,000, with at least as much more developed. The Hidden Creek group has known ore reserves estimated at a gross value of about \$40,000,000. Mr. Rodgers has been to Mexico for about a year; he will probably make Los Angeles, California, his headquarters in future.

Mr. E. M. Sandilands, Gold Commissioner for Queen Charlotte mining division, was married to Miss Melinda Sutherland in Vancouver on September 15. The honeymoon trip included a visit to Slovan, in which district Mr. Sandilands resided some years before going North.

Mr. C. W. H. Sansom, of Spokane, Washington, lately visited Greenwood, of which Boundary district town he was one of the pioneer residents. While there he wrote for publication his impressions of the Argo mining property, in the development of which Mr. O. Lofstad has shown remarkable persistence and pluck.

Mr. Stuart J. Schofield, of the Geological Survey of Canada, after having spent some time with International Geological Congress excursionists, has resumed field work in East Kootenay. From Kootenay lake he went up Crawford creek to join his party which had gone ahead on the trip over the summit and down the St. Mary river.

Mr. Robert Stevenson, an old-time placer miner at both Cariboo and Granite Creek diggings, met with an accident in Princeton, Similkameen, recently. The Star states that he fell off the sidewalk one dark Sunday night when on his way to attend a church service. Mention of the "Colonel," as he is called by many, recalls an incident of six or seven years ago, known to the writer but not to many others. "Colonel Bob" was in arrears for a mining journal, but being reluctant to stop sending it to an old-timer, I left his name on the mailing list. In course of time the Colonel "made a raise" by selling some mining property; about that time he fell ill and was taken to one of the hospitals in Spokane. When he got better one of the first things he did was to send to the publisher of the British Columbia Mining Record a remittance for \$12, that being six years' subscription, and that without being dunned for payment. Just about that time I had written off something like \$800, unpaid subscriptions; Mr. Stevenson was one of very few who recalled part of that total which had been carried to the wrong side of the Profit and Loss account. I can remember the names of many who rate themselves as much above the old prospector in the social scale, but in similar common honesty they did not come anywhere near his class.

Mr. R. H. Stewart, general manager of the Consolidated Mining and Smelting Company of Canada, Ltd., was in Victoria during the latter part of the month to meet the president of the company, Mr. W. C. Matthews, of Toronto, who was on the Coast with a party of Canadian Pacific Railway Co. directors and officials.

Mr. A. K. Stuart has been on a visit to Kootenay and Boundary districts. When he was at Nelson the Daily News said: A. K. Stuart, of Victoria, and C. J. Wilson, a mining engineer from Edinburgh, Scotland, have returned from Sanca, where they made an inspection of the German Mountain group. Mr. Stuart, who is an old-timer in this province, having landed in Vancouver in 1887, will leave this morning for the Boundary. Mr. Stuart was the original owner of the Vernon News, starting that paper about the time that the late John Houston founded the Nelson Miner.

Mr. F. M. Sylvester, assistant to the general manager of the Granby Consolidated Mining, Smelting and Power Co., late in September returned to Spokane from another visit to the company's property at Granby bay, Observatory inlet, and afterward left for New York, to attend the annual general meeting of

shareholders in the company, to be held in that city on October 7.

Prof. Francis A. Thomson, head of the Department of Mining Engineering, State College of Washington, Pullman, Washington, a few weeks ago made a long trip to the headwaters of Crawford creek, to investigate some copper claims there.

Mr. Wm. Thomlinson, of New Denver, having completed similar work in Slocan and Slocan City mining divisions, is now collecting specimens of ore from numerous mining properties in Ainsworth division. He was at Kaslo recently and intended going thence to Ainsworth. The western part of this division has already had his attention. He has collected, and stored at New Denver, awaiting instructions for forwarding to Victoria, more than 500 specimens, including silver-lead, silver-zinc, gold-silver, silver, zinc, and antimony ores. Nearly 300 are from mines in Slocan division, and more than half that number from Slocan City division, while about 70 are from Bear lake, White-water, and Jackson basin, in the western part of Ainsworth division. It is evident that the Department of Mines did well in selecting Mr. Thomlinson for this work, for not only does he know the Slocan district intimately, but he is as well an enthusiast in collecting mineral specimens.

Mr. E. E. Ward, formerly superintendent of the Silver Hoard mine, has returned to Ainsworth mining division after an absence in Spokane and other places south of the International Boundary line.

Mr. J. L. Warner, manager of the Richmond Consolidated Co., which owns a group of mining properties in the South Belt of Rossland camp, was married in Spokane lately.

Mr. W. D. Willcox, who in the late nineties established the Pioneer at Phoenix, and for a number of years owned and edited that newspaper, until he sold out and returned to Spokane, is now secretary and publicity man for the Medicine Hat board of trade, Eastern Alberta.

Mr. W. R. Wilson, of Fernie, general manager for the Crow's Nest Pass Coal Co., spent a few days in Spokane during the holding of the Inland Empire fair in that city.

Hon. H. E. Young, Provincial Secretary and acting Minister of Mines, intends paying one of his periodical visits to Atlin early in October, to meet his constituents there and familiarize himself with progress and prospects in what in late years has been the most productive placer-gold district in British Columbia.

On September 20 the Toronto Globe included in its financial news the following paragraph: "Consolidated Mining and Smelting advanced to a new high level for year yesterday at \$85. Although the annual report will not be issued for some time yet, as last year the date of the annual meeting was changed from October to December, the company is reported to be doing exceedingly well. The indebtedness to the bank, which at the end of June, 1912, amounted to \$343,819, is now said to have been wiped out, and net earnings are stated to be at the rate of \$100,000 a month. The stock is selling on an ex-dividend basis."

INTERNATIONAL GEOLOGICAL CONGRESS.

The following notes of the International Geological Congress Excursions are additional to the account published in the August number of the B. C. Mining Exchange:

At the close of the visit to Victoria both parties came to Vancouver. Excursion C2 arrived on the morning of August 27, and the members were taken to Stanley Park and other places of interest in and about the city. At noon this party left by special train on the return journey eastward.

Excursion C1 arrived from Victoria on the evening of August 27, and spent the night in the city. Next morning about 50 went to Britannia Beach, where the Britannia Mining and Smelting Co.'s concentration (including the Minerals Separation process plant) was inspected. The visitors were afterward entertained at luncheon by Mr. J. W. D. Moodie, vice-president and general manager of the company. The larger number of the party left Vancouver at midnight, east-bound.

Excursions C8 for Malaspina and Yukon, and C9 for Prince Rupert and Skeena river, were made up of members of those of the larger parties who had arranged to go north before returning eastward. The C.P.R. Co.'s new steamer Princess Maquinna, was specially chartered for the trip to Prince Rupert, Malaspina (Yakutat bay), and Skagway. Vancouver was left on Thursday night, August 28, and Prince Rupert was reached on Saturday morning shortly after 10 o'clock. The Grand Trunk Pacific Railway Co. sent out a special train, with diner and sleeper, which took 19 of the visitors up the Skeena valley to Hazelton, and thence to Moricetown. The night was spent at the latter place, and next morning some of the party walked two-and-a-half miles to the falls before breakfast. While up-river one of the things that interested the visitors was the sight of Indians spearing salmon. Mr. W. F. Robertson, provincial mineralogist, who went thus far on the excursion, bought some freshly caught salmon for the visitors' breakfast. On the return journey to Prince Rupert the train was stopped at about a dozen places of interest, for the benefit of the visitors. Prince Rupert was reached at 7 o'clock on Sunday evening.

While some of the party were away on the trip up the Skeena the others remained in Prince Rupert on Saturday and were shown about the city and immediate surroundings, including a trip in launches to the cold storage works. On Saturday night the Maquinna proceeded to Granby bay, Observatory Inlet, and on Sunday the Granby Consolidated Co.'s Hidden Creek copper mine was visited and the site of the 2000-ton smelter and other works in the vicinity looked over, local officials pointing out the progress already made with erection of buildings and installation of equipment. The Maquinna reached Prince Rupert on return, at nine o'clock that night, and later took all the excursionists (excepting five who had to return to catch the S.S. Empress of Asia), farther north. A call was made at Ketchi-

kan, to conform with U. S. Customs requirements, and then Juneau was visited, together with the Treadwell mine. Leaving Juneau nearly a week was spent in visiting Yakutat bay, and the imposing glaciers in that part of the Coast region, Malaspina, of course, being the chief attraction. Then the run to Skagway was made, and there those going to Dawson left the Maquinna and proceeded by the White Pass & Yukon Route—by train to White Horse and thence down the Lewes and Yukon rivers to Dawson, a call having been made on the way at the Tantalus coal mine. Three days—Sept. 10-12—were spent in and about Dawson, and some of the more important gold-bearing creeks and productive mines were visited, the visitors being shown the gold dredges as well as the hydraulicking plants, which together produce between \$5,000,000 and \$6,000,000 a year in gold.

Dawson was left on Saturday night, Sept. 13, and stops were made at various places en route upriver to White Horse. On Wednesday morning the White Horse copper deposits had attention, and next morning train was taken to Skagway, and thence to Vancouver by C.P.R. regular steamer, this city having been reached on Monday, Sept. 22.

Mr. R. G. McConnell was leader of these excursions, with Mr. W. A. Johnston, also of the Geological Survey, Ottawa, as secretary for C8, and Mr. G. G. Aitken, geographer for the Provincial Government, secretary of C9. The visitors gave unstinted praise to the C.P.R. and its officials for the arrangements on the S.S. Princess Maquinna for their comfort and pleasure, while much praise was also given to the Grand Trunk Pacific for the excellent accommodation and attention, provided under comparatively unfavorable conditions, during the trip to Hazelton and Moricetown and return.

On leaving Vancouver the visitors divided into two parties, one going to Rossland, under the guidance of Mr. R. W. Brock, and thence to Medicine Hat by the Crowsnest line, while the other went by the main line, with Mr. McConnell in charge. The two parties joined at Medicine Hat and proceeded thence eastward.

NEW YORK MINING EXPERT ON SHUSHANNA GOLD FIELD.

The Vancouver Daily Province of the 26th inst. says:

Interesting information concerning the Shushanna gold fields is contained in a report prepared by Mr. F. H. Burrall, a New York mining engineer, who has been conducting an inspection of the White River region and the districts in the Yukon adjacent to the scene of the new strike on behalf of the White Pass and Yukon route. His investigations were pursued in accordance with instructions from the president of the company, Mr. O. Dickeson, with a view to a possible extension of the White Pass Railway line from its present terminus. As mentioned in the Province yesterday, the company is so impressed by the prospects that it contemplates starting work on the proposed new line next year.

Mr. Burrall heard of the discoveries at Shushanna after he had been out on his inspection trip several weeks and so per-

sistent were the reports that he made a special visit to the scene of the strike to ascertain the truth of the stories he heard, arriving there on August 3. Here are some extracts from his report:

Describes Its Location.

"The Shushanna gold district is from eight to twelve miles from the Shushanna river, lying between Johnson (or Chitenda) and Wilson creeks. Roughly, the claimed area is about fifteen square miles in extent. It varies in elevation from 3,800 ft on Wilson Creek, to 5,100 ft. at the extreme head of Big Eldorado. The timber line is at 4,200 ft. and most of the district is above it.

"Johnson and Wilson creeks are medium grade streams of about 1,000 to 1,500 miner's inches of water, at the time of my visit, with wide bare gravel bars and occasional islands and canyons. They are about six miles apart and almost parallel, flowing westerly into the Shushanna. The country between is undulating, with apparent gravel covered slopes for three to five miles to the north into the Wilson and abrupt, steeper hillsides on the south to the Johnson.

"The principal gulches into Wilson creek are Big Eldorado and Glacier creeks, each about 4 miles in length. Various short gulches lead into both streams. Of these the most important seems to be Gold Run, about three miles long, from the head of Big Eldorado into Glacier Creek, about half a mile above its mouth. Going southerly up to the head of Glacier Creek one comes into Skeekum Gulch, which in half a mile leads into Little Eldorado, a stream about two miles long, which empties into Bonanza Creek, two and a half miles above its junction with Johnson Creek.

Site of Original Discovery.

"Little Eldorado is a wide, open gulch to within 500 yards of its mouth, where it narrows to about 50 ft. At that point the original discovery was made by James and Nels. The day of my visit there, five men were shovelling into a string of three sluice boxes, taking the gravel from a width of 25 ft. and a depth of 2½ to 3 ft. I judged they were taking up from 6 to 12 inches of bedrock, a broken slate-like rock.

"In the afternoon I passed the place while the clean-up was being calculated and estimated that there were from 40 to 50 ounces of coarse gold in the pan. At \$16 an ounce my estimate would place the day's work at \$150 per man for seven or eight hours' shovelling.

"I asked if the balance of the ground on the sides of the gulch carried values and was told it did. The men said that their present operations were for the purpose of obtaining ready money and that next spring they intended to put in a plant to take in the full width of the gulch and to clean the bedrock.

"A mile down the Bonanza, below Little Eldorado, three men have a fraction in the creek bed. They had three boxes rigged up and had made their first run the day before our visit. They, too, were taking up two and a half to three feet of gravel from the creek bed. We were told they got 25 ounces from seven hours' shovelling. In the clean-up was a \$42 nugget, which we saw. It was clean gold, free from quartz.

"Apparently these were the only two places from which gold had been taken in paying quantities. On the other hand, so far as I know, these were the only likely places where bedrock had been reached. Most of the men in the district were busy doing the work required for recording their various claims, hunting for fractions and whip-sawing lumber. Several had encountered frozen ground.

"It is likely that the gravel on the Wilson creek slope—and that includes the larger part of the district—is considerably deeper than on Little Eldorado and except in the creek beds, is frozen. The gravel on both Johnson and Wilson creeks is undoubtedly of considerable depth.

"Considerable jumping of claims is said to have occurred and it is told that there has been more or less blanketing. I saw some claims with at least two sets of papers. The recorder, George Morgan, told me that 250 claims had been recorded and that about 1500 had been staked.

Advice to Prospectors.

"People going into the district should be prepared for a sojourn of several months. They must either wait for claims to lapse or must search for gold on new creeks. The Shushanna country looks promising and the gravel deposits seemingly extend also down the Beaver Valley into Canadian territory. I fully expect that new and desirable discoveries will be made outside of the Shushanna."

Commenting on the trail Mr. Burrall expressed the opinion that the Kluane trail is the best route. He gathered this impression from talking with prospectors he met en route. With reference to the Scolai Pass route, the trail taken by those going in from Cordova Bay and the Copper River railway, he says: "An engineer friend who has had much experience on trails in South and Central America, Mexico and the West, told me that Scolai Pass is the worst trail in the known world. He did not return by it."

"The Kluane trail, while perhaps longer he continues, has several advantages. The first 142 miles is a good wagon road. Freight can be transported by boat to the foot of the lake, thus effecting a saving of 50 miles. The Canadian government has a party on the trail marking it and putting up signs. There is good feed for horses the entire distance. We carried no horse feed whatever and at no time did our animals lack good pasture. There is an abundance of game and travellers can always secure fresh meat at this time of the year.

"After leaving Kluane Lake, caribou, moose and mountain sheep may be obtained without great effort. Every clear stream and lake abounds with fish and in the higher elevations ptarmigan are plentiful. In few places, and then only for short stretches, is it without shelter and firewood. Anyone properly equipped should not encounter any difficulty in getting through by this route."

A report sent out from Vancouver is to the effect that the company operating the White Pass & Yukon route to Dawson intends to extend its line toward the Chisana or Shushanna gold field in Eastern Alaska. This extension is to be in Canadian territory.

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VANCOUVER, B. C., SEPTEMBER, 1913.

EDITORIAL.

Present conditions in British Columbia all point toward a very big mining "boom" in the course of the next few months. The temporary slackening of the real estate movement—partly due to the financial stringency, but more to the fact that many investors are "marking time" until the linking up and completion of the big railway systems—has caused men to turn their eyes elsewhere for profitable speculation. No fairer field offers for this than is presented by the mines of British Columbia. The mining industry in this province ceased to be a gamble many years ago. It is now far and away the largest industry on this side of the Rockies, with a production which has steadily increased year by year from some sixteen million dollars ten years ago, up to close on thirty-three million dollars for last year. These, as has often been pointed out in the columns of this publication, are enormous figures for a country so scantily populated and so slightly developed as British Columbia. It requires no prophet to foresee a production of ten times the present high values within the next five or six years, and all indications point to the fact that the investing public is beginning to realize the profitable returns offered by the mines of this province.

There is, however, a reverse side to the shield. It is the successful army which has its camp followers and robbers, it is the successful merchant who has his fraudulent imitators, and the mining industry in British Columbia is no exception to the general rule. Now, it has never been the policy of the B. C. Mining Exchange to rank itself among those "champions of honest business" and "protectors of the investor" who infest the field of Canadian journalism as they do the fields of Canadian politics and Canadian religion. Our experience of the average "reformer" on these lines has led us to the regrettable conclusion that in nine cases out of ten he is a first-class scoundrel, and a two-handed blackmailer into the bargain. But occasionally instances arise—carefully ignored by the general press—in which so flagrant an attempt is made to delude the small investor, that a word of warning, if only in the interests of the welfare of an industry itself, seems to be called for. The present revival of public interest in British Columbia mining is just now furnishing a few cases in point. They are liable to be the first of a pretty large crop, and a word in season now may save much disappointment to the small investor and much undeserved discredit to the legitimate miner of this province.

We refer to certain companies at present making a strong bid for public support on the grounds of their being "in touch" with conditions, or possessed of "valuable" claims in some of the more prominent mining camps. Companies publishing statements of this kind should invariably be avoided by the small investor. The really big investor knows too much to be caught by them, but the tale of experience all goes to show that the small investor, the man with a few hundred or a few thousand dollars saved out of his salary or wages, is the especial prey of this type of shark. There is only one thing to say to the small investor in this connection: "Do not buy stock in these companies unless you have first obtained, from reliable and official sources, indisputable evidence as to their bona-fides. Enquiries addressed to Mr. R. F. Tolmie, Deputy Minister of Mines, Victoria, B.C., requesting information as to the character and state of development of those mining districts where these mining companies claim to be operating, would elicit much valuable information for the man who is sensible enough to look before he leaps. There are plenty of good mining companies—but there are also plenty of bad ones."

Many eyes are upon Portland Canal at present, where the big tunnel of the

Portland Canal Tunnels, Ltd., is now fast nearing completion. In another column we publish a summary of operations up to date upon this important enterprise, for the benefit of those of our readers who have not had the opportunity to follow the company's work closely. The undertaking is one of the utmost importance to the entire district, and indications are that it will meet with the success which its promoters have so well deserved.

The B. C. Mining Exchange extends its cordial congratulations to the management of the Vancouver Exhibition upon the excellent showing of British Columbia's ores and minerals, which was one of the leading features of the event. Elsewhere in this issue we publish an account of the display, from the pen of Mr. H. B. (Bull-dog) Brown—himself one of the leaders among the public-spirited men who are doing so much to bring British Columbia mining to the front rank in the public eye. The showing last year was good, the showing this year is far better, and, if the plans proposed by Mr. Brown mature, that of next year will far surpass all previous achievements.

A press despatch from Washington, D. C., states that in connection with the United States tariff bill, representatives of the Senate and House in conference have agreed to an adjustment of differences in regard to duties on lead and zinc, as follows: House representatives receded from their position requiring a rate of one and a half cents a pound duty on lead and accepted the Senate's rate of three-fourths of one cent a pound. Senate representatives yielded to the decision of the House that the rate on zinc ore be 10 per cent., instead of twelve and one half per cent., as asked by the Senate.

The annual financial statement of the International Coal and Coke Co., Ltd., operating in the Crow's Nest district of Western Alberta, shows a surplus of \$657,289.48; reserve funds and profits added bring the total cash and investment resources of the company up to \$921,443.77.

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LATEST METAL MARKETS.

(From Chicago Mining and Engineering World.)

Silver.—Quotations at New York for bar silver per fine ounce and at London per standard ounce for the week ending Sept. 17, were as follows:

	New York	London
	Cents	Pence
Sept. 11	60½	27½
Sept. 12	60½	27½
Sept. 13	60½	27½
Sept. 15	60½	27½
Sept. 16	60½	27 13-16
Sept. 17	60½	27 15-16

MONTHLY AVERAGE PRICES OF SILVER

	New York			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	63½	61½	62.928	56.259
February	62½	58½	61.625	59.043
March	59½	56½	57.969	58.360
April	60½	57½	59.540	59.265
May	60½	59½	60.360	60.754
June	60½	58½	58.975	61.265
July	59½	58½	58.423	60.615
August	59½	59	59.27	61.600
September				63.364
October				63.504
November				62.750
December				63.390
Year				60.837

Copper.—Early last week copper prices advanced for all grades as a consequence of increased buying operations. Electrolytic and lake metal advanced one-fourth cent per pound and at the beginning of the present week a still further advance is noted. The strong character of the statistical position was demonstrated clearly by the August report of the Copper Producers' Association, published last week. It showed a further reduction of surplus stocks amounting to 15,280,908 lbs., lowering these accumulations to 38,224,087 lbs., the smallest amount recorded since the Copper Producers' reports were first compiled in January, 1909. This additional lowering of the surplus stocks was accomplished through a curtailment in the output amounting to 6,442,240 lbs. and to an increase in domestic deliveries of 14,745,615 lbs., which have more than offset a falling off in exports of 5,216,602 lbs.

Standard copper at New York was dull and irregular and nominally quotable at 16½ cts. for all positions from September to December, inclusive, at the close of the week.

The exports from New York and Baltimore reported recently were 3,077 tons, making the total for the week ended Sept. 11, 8781 tons, and since Sept. 1, 12,335 tons.

Last week the total imports were 3520 tons of copper, 260 tons of matte, and 2075 tons of ores. Since Sept. 1 arrivals have been 5840 tons of copper, 685 tons of matte and 2075 tons of ores.

Quotations for copper per pound at New York and per long ton of 2240 lbs. at London for the week ending Sept. 17, were as follows:

	Lake	Elec	Cast	Standard	London
Sept. 11	16—16½	16½—16½	16½—16½		£2 10 0
Sept. 12	17—16½	16½—16½	16½—16½		73 0 0
Sept. 13	17—16½	16½—16½	16½—16½		73 0 0
Sept. 15	17—	17—16½	16½—16½		74 15 0
Sept. 16	17—	17—16½	16½—16½		75 2 6
Sept. 17	17—	17—16½	16½—16½		74 12 6

MONTHLY AVERAGE PRICES OF COPPER

	New York—Lake Superior			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	18	16½	17.116	14.526
February	16½	15½	15	14.606
March	15½	15½	15.306	14.911
April	15½	15½	15.731	16.092
May	16	15½	15.956	16.391
June	16½	14½	15.445	17.612
July	15½	14½	14.770	17.536
August	16½	15½	15.697	17.694
September				17.724
October				17.753
November				17.750
December				17.750
Year				16.695

	New York—Electrolytic.			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	17½	16½	16.983	14.425
February	16½	15	15.717	14.435
March	15½	15½	15.065	14.853
April	15½	15½	15.620	16.003
May	16	15½	15.896	16.326
June	16½	14½	15.203	17.505
July	15½	14	14.646	17.418
August	16½	15½	14.787	17.694
September				17.706
October				17.746
November				17.750
December				17.750
Year				16.634

Tin.—The tin market was dull last week and prices had a downward tendency both at New York and London. Weakness was especially notable on nearby positions in the domestic market, the decline being seven-eighths cent per pound on spot tin, which at the close of the week was being offered at 42½ cts., September is practically the same as spot. The demand from consumers in the interior was disappointing, but there was a fair volume of business early in the week. In the last few days inquiries from the interior have been confined to very small lots.

The indication is that about 4500 tons will be available for domestic deliveries this month, including stocks in warehouse, but arrivals are likely to be only about 3100 tons.

The arrivals at United States ports since Sept. 1 have been only 1163 tons, but 3595 tons are now afloat for New York and outports.

Quotations for tin at New York and at London for the week ending Sept. 17, were as follows:

	New York	London
Sept. 11	42.50—42.25	£193 5 0—192 10 0
Sept. 12	42.50—42.25	192 15 0—192 0 0
Sept. 13	42.50—42.25	192 5 0—192 0 0
Sept. 15	43.00—42.75	195 15 0—194 0 0
Sept. 16	43.00—42.75	194 10 0—194 0 0
Sept. 17	42.75—42.40	193 10 0—192 15 0

MONTHLY AVERAGE PRICES OF TIN NEW YORK.

	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	51.25	49.50	50.414	43.275
February	50.30	47.30	48.738	43.345
March	48.50	45.62½	46.844	42.690
April	50.25	47.37½	49.075	43.970
May	50.75	47.10	49.15	46.055
June	46.75	42.50	45.071	48.046
July	47.75	38.75	40.349	44.665
August	42.80	40.55	41.561	45.849
September				49.232
October				50.073
November				49.869
December				49.899
Year				46.330

Lead.—Lead was quiet and easier in tone, but weak. On call at the New York Exchange September and October offered at 4.80 cts., with 4.70 cts. bid for spot, September and October on Friday. On call 4.60 cts. was bid for spot, September and October, with 4.70 cts. asked

for spot and 4.65 cts. for September and October on Friday.

London declined 12s 6d last week. Soft Spanish closed at £20, against £20 12s on the preceding Friday.

Quotations for lead at New York and at London for the week ending September 17, were as follows:

	New York	London
	Cts. per lb	Per Ton
Sept. 11	—4.70	£20 10 0
Sept. 12	—4.70	20 0 0
Sept. 13	—4.70	20 0 0
Sept. 15	—4.70	19 17 6
Sept. 16	—4.70	20 10 0
Sept. 17	—4.70	20 12 6

MONTHLY AVERAGE PRICES OF LEAD

	New York			
	1913	1913	1913	1912
Month.	High	Low	Avg.	Avg.
January	4.37½	4.25	4.301	4.435
February	4.35	4.25	4.30	4.068
March	4.40	4.25	4.340	4.167
April	4.45	4.30	4.381	4.213
May	4.55	4.25	4.418	4.164
June	4.40	4.25	4.336	4.395
July	4.50	4.30	4.355	4.669
August	4.85	4.45	4.740	4.581
September				5.071
October				5.088
November				4.633
December				4.200
Year				4.482

Spelter.—Spelter was dull but steady during the week. On call at the New York Metal Exchange 5.85 cts. was bid and 5.95 cts. asked for spot, September, October and November on Friday. On call at the Exchange 5.70 cts. was bid for spot, September, October and November, with 5½ cts. bid for spot and September and 5.80 cts. for October and November on Friday.

London declined 5s. G. M. B. closed at £21 5s against £21 on the preceding Friday.

Quotations for spelter at New York and at London for the week ending Sept. 17, were as follows:

	New York	London
	Cts. per lb.	Per Ton
Sept. 11	5.95—5.85	£21 5 0
Sept. 12	5.90—5.85	21 5 0
Sept. 13	5.95—5.85	21 0 0
Sept. 15	5.95—5.85	21 5 0
Sept. 16	5.95—5.85	21 0 0
Sept. 17	5.95—5.75	21 5 0

MONTHLY AVERAGE PRICES OF SPELTER

	New York	London.		
	1913	1913	1912	1912
Month.	High	Low	Avg.	Avg.
Jan.	7.40	6.40	7.192	6.505
Feb.	6.80	6.15	6.406	6.541
Mar.	6.45	5.70	6.222	6.817
Apr.	5.95	5.45	5.712	6.799
May	5.55	5.25	5.477	6.85
June	5.35	5.00	5.169	7.011
July	6.65	4.30	5.279	7.229
Aug.	5.95	5.55	5.760	7.042
Sept.				7.553
Oct.				7.550
Nov.				7.429
Dec.				7.331
Year				7.053

Granby Consolidated was the chief feature of the month of September in the transactions of the Stock Exchange of Spokane, Washington. The secretary's report showed the transfer through the clearing house of the exchange of 82,040 shares, having a total value of \$53,306. The proportion for Granby Consolidated was \$36,282, that having been for 490 shares at prices ranging from \$72.25 up to \$77. Other British Columbia shares sold were: Consolidated Mining and Smelting, 50 at \$78.75 to \$79.75, \$3,953; and 1,500 Rambler-Cariboo at 30½c, \$475.

Coast and Island Mining

Portland Canal Tunnels, Ltd. Making Excellent Progress—Mining Conditions in the Coast Districts—The Hidden Creek Mines—Excellent Mineral Exhibit at Vancouver Fair—Mining Activity Round Hazelton—General News from the Mines

PORTLAND CANAL TUNNELS, LTD.

The weekly letters of Mr. W. J. Elmen-dorf, general manager for the Portland Canal Tunnels, Ltd., to the directors of the company in Victoria, are of particular interest to the shareholders of the company, and, too, to the much larger number of shareholders in the Portland

eastern railway line at a point about three and one-half miles from the town of Stewart, situated at the head of Portland Canal. The fissured zone above mentioned extends, at least, from the Jumbo and Ben Bolt mineral claims, on the south, to and through the Stewart Mining and Development Co's group, on the north, a distance of more than four miles. In its course on the surface it

were mined, and some 2,000 tons of concentrates from this was shipped to smelteries. Shipments of ore were also made from two more of the properties, and much ore was developed on others. Had mining and transportation costs been reasonably low, there would have been a sufficient margin of profit to have admitted of the operation of the mines being continued; unfortunately, though, the



Another View of Section of Mineral Exhibit at Vancouver Exhibition.

Canal Mining Co., Stewart Mining and Development Co., Glacier Creek Mining Co., and other owners of mineral claims in what has been described by Mr. R. G. McConnell, of the Geological Survey of Canada, as "a long fissured and silicified zone."

The Portland Canal Tunnels, Ltd., was organized primarily for the purpose of driving a long crosscut adit, the site for the portal of which it was decided should be close to the Canadian North-

traverses in addition to the properties just mentioned, the groups of claims of the Portland Canal Mining Co., the Glacier Creek Mining Co., and the Portland Wonder Co., and the O. K. Fraction, Chicago No. 1 and No. 2, and other mineral claims. Within this zone ore-bearing veins have been found, and to a greater or less extent explored on most of the claims included in it.

From the Portland Canal Mining Co's property approximately 8,000 tons of ore

mine workings were so situated that transportation costs both ways were practically prohibitive. In these circumstances the Tunnels Co. was organized, and in September, 1912, after contracts had been entered into with the various owners concerned, the work of driving an adit was commenced.

It was estimated that a tunnel a length of 2,300 ft. would enter the main vein of the fissure zone at a depth, on the vein, of 620 ft. below a surface work-

ing of the Portland Canal mine known as the Richard Cut, in the direction of which working the tunnel is almost exactly headed. The size of the tunnel is 7 ft. 6 in. by 8 ft. in the clear. In it are a single track of 20-lb. steel and a 10 in. ventilating exhaust pipe, the latter against the roof. The ditch for drainage is about 18 in. deep. Compressed air for the drills is supplied by a water-driven cross-compound Rand compressor, capacity 520 cu. ft., installed in the Portland Canal Mining Co's concentrating mill near the railway.

The manager's report of August 28 showed that a distance of 1858 ft. from the portal had then been reached, and that three days previously there had been cut a veinlet of quartz containing a fair proportion of pyrite and a very little galena. On the day of writing the adit had entered a larger vein of white quartz containing pyrite. The manager observed: "As we get farther from the greenstones into the argillites the character of the country rock appears to change for the better, for quartz is becoming plentiful and the mineralization—of pyrite and pyrrhotite—more abundant. The rock is of such a nature that I should not be at all surprised to get into an ore-bearing vein at any time, although there is no reason beside the good appearance of the ground to warrant any such expectation."

On September 4 the face of the adit was in 1,914 ft. from the portal. The manager advised further that "the vein mentioned the previous week had been passed through; it is 11 ft. 6 in. wide and fairly well mineralized with pyrrhotite. The veinstone is quartz and calcite, and the slate walls are particularly well defined. An interesting question is—what will be found at the junction of this vein with the main vein we are driving for. Assuming that our projections are correct, this junction will be about 150 ft. south of the point where the tunnel will cut the main vein. The vein we have just passed through will be well worth exploring later."

On September 11 the manager advised that the face of the adit was then in 1,974 ft., and on the 18th 2,031 ft. The report for the latter week included the information that two unimportant faults had been crossed, and that the rock continued to be of a similar promising character to that driven through for some time previously, with a little mineralization scattered here and there. By the 25th a distance of 2,087 ft. had been reached, without any change of particular interest to be noted.

While, of course, little can be said with certainty concerning the cutting of the main vein, which it was calculated was, at the time of the last-mentioned weekly report, fully 200 ft. ahead, those immediately interested are very hopeful that a good orebody will be found and conditions generally be favorable to a continuation of development in the shape of drifting both ways on the vein. The opening of payable ore in considerable quantity at that depth will be a most important advance, and one that will put new life and encourage much mining activity in the camp.

The Lone Pine mine, near Oroville, has been sold to G. S. Jennings.

REVIEW OF BRITISH COLUMBIA COAST MINING.

Other than a continuance of labor troubles at some Vancouver Island coal mines, there has not been anything unusual to interfere with the progress of mining in the Coast district. Weather conditions have been generally favorable, and there has been much activity in some of the mining camps.

At the Britannia, mining, concentrating and construction work have proceeded without interruption, there having been available all the men needed to meet the requirements of the Britannia Mining and Smelting Co.

The report published several months ago to the effect that the Consolidated Mining and Smelting Co. of Canada, Ltd., intended developing some mineral claims in the vicinity of Howe Sound, seems to have been premature, for it has not yet made a move in the direction of commencing work in Vancouver mining division.

It is stated that the work of prospecting some mineral claims on Hotham Sound, off Jervis Inlet, will be undertaken by a local organization. Copper-gold is reported to have been found, containing metals in sufficient quantity to encourage those interested to spend some money in further prospecting the claims, which are situated within easy reach of the water. A well known mining engineer who was cruising in Jervis inlet lately making enquiries concerning mining in the vicinity did not hear of much having been done up to that time.

Texada Island.

On Texada Island, The Tacoma Steel Co. has continued the development of the Marble Bay mine, situated near Van Anda. Work has been done at the 1300-ft. level, which is more than 100 ft. in vertical depth. Ore is being shipped to Tacoma, it having long been the company's custom to have it smelted there. Some local men have been operating the Cornell under lease, with ten to twelve men employed. No work is being done at the Little Billy now, operations having been suspended. Since publicity was first given to a story of the wonderful richness of gold ore from the Crackerjack property, little has been heard of it. A press despatch sent out from Vancouver, as published, stated that the ore "assayed at \$705,200 per ton. or at the rate of \$106 per pound." This works out at rather more than 6,650 lb. to the ton; also, since fine gold is of a value of \$20.67 an oz., there must have been more than 34,000 oz. to the ton. Here and there a man doesn't believe it—thinks the story as well as the property a "Crackerjack," but there's no satisfying some people anyway.

Vancouver Island.

On Vancouver Island there has been some advancement made toward a resumption of operations at the coal mines at which a total suspension of work followed the August excesses of strikers. The Canadian Collieries company has men at work at its Extension mines, though production of coal will necessarily continue small until power haulage

shall again be provided, for at present only mules are used, the three electric motors formerly employed in hauling having been destroyed by fire when the rioting strikers wreaked vengeance on the company in August. The Pacific Coast Coal Mines company has made a fresh start, though only in a small way as yet, at its Fiddick mine, South Wellington. The Jingle Pot has settled down to production, the Vancouver-Nanaimo Coal Mining company, owning it, having made terms with the United Mine Workers of America; but this mine is the least important as regards its productiveness and coal reserves of all in Nanaimo district. The Western Fuel Company has men keeping parts of its big mines in as good shape as is practicable under existing unfavorable conditions, but is not producing any coal. The directors in San Francisco have arranged to obtain all the coal they require to supply their customers in that city, from Australia and Japan, and from Puget Sound as well should it be found necessary to draw supplies from there. Figures printed on another page show that the Canadian Collieries company has been able to maintain a comparatively large output from its mines in Cumberland district.

As to progress in connection with the development of metalliferous ore deposits—since Mr. Chas. H. Clapp left Vancouver for Arizona in the early part of September—geological investigations have been continued in Sooke district, west of Victoria, by other members of the staff of the Geological Survey of Canada. It is understood that occurrences of copper ore in that district are regarded as of sufficient promise to warrant much development work being done to explore them.

In Alberni District.

Copper ore in Alberni district is to receive attention, the Ptarmigan Mines Co. having been organized to prospect and develop mineral claims in the vicinity of Great Central lake. Seven years ago Mr. Herbert Carmichael, provincial assayer, and assistant provincial mineralogist, visited that part of the island and made a report, which was printed in the "Annual Report of the Minister of Mines" for 1906. The following was his introductory account of what he saw there: "Considerable bodies of ore having been reported to exist at the head of Great Central lake, Alberni district, it was decided to make a preliminary examination of that region, which was done toward the end of August, 1906. Great Central lake can now be reached with ease from the town of Alberni, a distance of 12 miles, by wagon road, the elevation of the lake being 200 ft. above the sea. This inland sheet of water presents the same physical features as do the inlets which indent the west coast of Vancouver Island, the mountains rising abruptly from the water, with here and there a valley extending back for a considerable distance, the most important valley being that extending to Ash lake on the northeast. The general length of the lake is east and west, and it is about 25 miles long by a mile or so wide. At its western end two creeks flow in, heading from mountains still further to the west. A trail from the lake follows the more northerly of these creeks on a gradual

ascent for a distance of ten miles, until it ends in a basin, shut in by high mountains, the basin having here an elevation of 1500 ft. above the Great Central lake and 1700 ft. above the sea. To the south a precipitous bluff rises 2075 ft. high, from which pours a considerable stream of water that barely touches the rocks until it reaches the bottom, breaking into a mass of spray in its descent. The ascent of the bluff requires stout muscles and the aid of the small bushes which cling so tenaciously to the clefts in the rock. On the top there is a small rocky plateau or basin enclosing a lake about half a mile long by a quarter wide, the elevation of the lake being 3350 ft. above the sea. This mountain lake, situated in the heart of Vancouver Island, with snow-clad mountains rising 2000 ft. above it, and the blue crevassed glacier of the 'Nine Peaks' showing up to the south in the morning sun, forms a beautiful scene."

After having given some particulars of the Big Interior group of seven mineral claims, Mr. Carmichael summarized as follows: "The mineralized zone, showing in the face of the cliff to the north of the basin and forming the great mass of low-grade mineral on the property, is so large, so inaccessible, and the mineralization so scattered, that it would be impossible to obtain anything approximating an average general sample of the exposure without the expenditure of time and money not justifiable under the circumstances. However, at the foot of the cliff, there is a talus extending the whole length or width of the mineralized zone, made up of material broken away from the whole face of the zone in question. While this talus may to a certain extent have been affected by weathering, it still may be considered a very approximate sample of the inaccessible cliff. Samples were taken from this talus, from which it is judged that approximately the central portion of the mineralized zone will assay from 0.5 to 1 per cent. copper, with 1.5 to 2 oz. of silver per ton and a trace of gold. This value extends over a width of about 1500 feet, while to the right the mineralization gradually fades off into the country rock. To the left of the mineralized zone is what has been called, for purposes of designation, the 'brecciated zone,' and which is merely a continuation, to the left, of the mineralized zone which has been here subjected to a

crushing due to movement, and in which the interstices between the fragments of the rock have been filled with secondary minerals, chiefly calcite, with some carbonate of copper forming a secondary enrichment. This secondary enrichment has taken place, as would be expected, along defined channels, producing streaks of higher-grade mineralization, often forming commercial ore. Here, again, no general sampling was possible, although a tunnel has been driven for some 31 ft. into the bluff it was found impossible to examine the face of the cliff for ten feet on either side of the tunnel mouth. The mineralization just described, and which forms the great bulk of visible mineralization on the property, is admittedly very much diffused through the rock, and is consequently so low-grade as to be of value only if found to be amenable to some form of concentration, and of which there seems to be a fair probability."

SKEENA.

The New Hazelton Mineowners' Association is making an effort to obtain many new members.

Gold Commissioner S. H. Hoskins, of Hazelton, has been visiting some of the mining camps in the district, to familiarize himself with local ore-showings and general conditions.

Some good-looking ore from the Wonder claim, on Rocher Deboile mountain, has been added to the collection of ores on display in the window of the Omineca Herald, New Hazelton.

Harris Bros. have completed the work of driving on the 100-ft. level of the American Boy, on Nine-Mile mountain. During the ensuing winter they will sink No. 3 shaft another 100 ft. They shipped a 350-lb. lot of fine silver-lead ore from this mine to the Prince Rupert Exhibition.

H. W. C. Jackson, formerly of Rossland and Spokane, contributed to the Omineca Herald of September 19 an account of a visit he paid to the Red Rose group of seven claims, situated about three miles from the present end of the wagon road and ten miles from the railway at Skeena crossing.

J. A. Beaudette arrived at New Hazelton on September 20 from Dockrill's basin, where he lately completed his second season's work of exploring the coal

measures there. Dockrill's basin is distant from Hubert 35 to 40 miles, and less than 100 miles from New Hazelton. Mr. Beaudette is on his way to New York, where he will report progress to his principals.

At the Silver Standard, on Glen mountain, the drive to the north on the 250-ft. level has entered what is believed to be the same shoot of ore as occurs on the 100-ft. level. Some extra good ore has been found in a drift on the upper vein. Nearly all the men are now employed in taking out ore, to have it in readiness for shipment as soon as there shall be sufficient snow to allow of its being taken out to the railway to advantage. It is expected that several trainloads of ore will be sent out from this mine during the winter.

A press despatch from Winnipeg, Manitoba, dated September 30, was as follows: The gap which has to be traversed by the Grand Trunk Pacific railway to reach the Coast was still further closed in by the permission of the Railway Board to operate another 100 miles of the line in British Columbia, which was received today. The service is on the west side of the gap and is an extension of the Prince Rupert line to Mile 301 from that place. The service will commence tomorrow. This is a line which passes the division point of Smithers, which is the second divisional point on the line west of Prince Rupert. The present operation stops at Mile 204.

Hudson Bay Mountain.

Frank Martin has made arrangements for pack animals to go to the White Heather, on Hudson Bay mountain, to bring down three or four tons of silver ore that he thinks will run from \$1500 to \$2000 a ton.

On the Silver Creek group situated just back of Smithers, the Hudson Bay Mountain Mining Co. is engaged in development, with 40 men, under the management of Harry Carpenter, Col. R. G. Steele is superintendent. This concern, with one of the best prospective mining properties in the district, is likely to cut an important figure in the development of our mines. It is expected that within thirty days the crosscut tunnel will tap the big showing on the second vein. With a length of about 400 ft., the tunnel will give a depth of foot for foot on the vein,

The Highest Cash Price Paid for Raw Furs.

Feed Stable in Connection

SKEENA CROSSING ROAD HOUSE AND GENERAL STORE

Prospectors' and Miners' Supplies at Lowest Prices

Saddle and Pack Horses for Hire

B. R. JONES, Proprietor

SKEENA CROSSING, B.C.

it is estimated. The company is working in the most systematic and thorough manner. J. G. Carsley, of Montreal, recently arrived with Col. Steele

Rocher Deboule Mountain.

O. B. Wallace, of Wallace, Idaho, and P. J. Jennings have been looking over the Wonder claim. They afterward visited the Highland Boy. It is stated that Mr. Wallace is prepared to take up and operate a mining property if he can get one to suit him.

Camp on the Highland Boy group, Rocher Deboule mountain, has been moved down to below timber line and preparations are being made for the winter's work. It is stated that it is intended to drive a 1000-ft. crosscut to cut four veins, and to gain a depth of about 1500 ft. on one of them.

The Vancouver Daily Province says: The Rocher Deboule Mountain copper belt is certain to be a big producer within the next year, according to William McDonald, who recently arrived in Vancouver from the North. The Butte company which owns the Rocher Deboule has decided to equip the property with machinery and to work it all winter, shipments to be made as soon as there is enough snow.

"The Highland Boy, incorporated as the Butte Rocher Deboule, is building permanent quarters to permit of the deep development of the ground," said Mr. McDonald. "Work has just been started on the Great Ohio group by R. P. Trimble of Portland. The Wild Rose group is also soon to be put on the producing list.

"In view of this development, it is thought likely that a smelter will be constructed, the Kitsequekla coal mines to furnish the coke.

"James McDonald, R. B. Jones and J. W. Hart have made what may prove to be an important anthracite strike two miles from Skeena crossing. They have located four sections; the coal seam is two feet thick. This coal has not yet been analyzed, but burning tests indicate that it is highway grade. Owing to its proximity to the railroad and the character of the seam I believe the coal can be laid down at Prince Rupert much below the present market price. In fact Prince Rupert dealers already have placed provisional orders for eight cars this winter."

A district newspaper says: On the Ingineka group a tunnel has been started on the 40-ft. vein; it is already in 15 ft. and shows about 4 ft. of quartz, with plenty of yellow copper and some gray copper. A crosscut will be driven to tap Nos. 1 and 2 veins at a depth of 100 ft.

Great Ohio Group.

R. P. Trimble, who recently purchased from W. Sargent and Colin Munro the Great Ohio group of eight claims, adjoining the Juniper group to the east, has let a contract to Geo. Jennings to make a trail, erect buildings, and drive an adit 300 ft. on No. 1 vein, and on September 21 Mr. Jennings left New Hazelton with three men to commence the work.

On September 12 the Omineca Herald printed a short description of the prop-

erty, supplied by Mr. Trimble, as follows:

"Until this year the property had been mainly noticed for a big single fissure that practically cuts the mountain in two, and is 9 ft. wide in places. This year, however, two new leads were discovered and opened by Sargent and Munro, the locators of the claims, and both leads are of exceptional promise. One is about 50 ft. away from the old fissure and it can be traced for more than 1000 ft. It varies in width from 3 to 8 ft., and on the surface consists almost entirely of a typical gossan, mixed in places with carbonate of copper. It had been exposed on the Juniper creek side by slide rock and there afforded an excellent place from which to start to drift on the vein.

"The other vein on the Kitsequekla claim has a width of from 3 to 5 ft., and has an iron capping in which appear in places small ribbons of quartz containing native gold. This vein shows on the surface for at least 500 ft.

"It is on these veins development work is to be done; after we get into the hill on No. 1, we shall cross-cut to No. 2 or to the old fissure."

Mr. Trimble left New Hazelton on September 14 for Portland, Oregon, and expects to return here about October 20 to see what progress has been made with the work on the group for which the contract has been let, as above stated.

New Hazelton District Ore Exhibit.

The display of ores made at the Prince Rupert Exhibition by the New Hazelton District Mine Owners' Association comprised samples from all the working mines tributary to New Hazelton, including the Silver Cup, Silver Standard, Harris mines, Erie, Rocher Deboule, Highland Boy, Sunrise, Silver Bell, and Lead King, and numerous small specimens from various other properties. Ores from this district took all the prizes excepting for gold-copper ore. Included in the awards were the following:

Best District Display, Prize of \$50; New Hazelton district.

Silver-Lead Ores: Silver Standard.

Zinc Ores: P. Craig, Brian Boru.

Copper-Silver Ores: F. Martin, White Feather.

H. W. C. Jackson, who was in charge of the exhibit, so arranged the numerous samples as to make a very attractive exhibit and one that received much attention from visitors to the exhibition.

Other District Notes.

The Telkwa Tribune gives the information that the mineral resources of the range of mountains lying to the west of the Bulkley valley are gradually being developed, but owing to lack of transportation the advancement of the properties there has necessarily been slow. It is expected, however, that this difficulty will be eliminated as it is practically certain that there is sufficient tonnage in the coal fields of that part of the country to warrant building a railway, and next year should see the beginning of an era of activity.

Work has been commenced on a sleigh road to the mining properties in Hunter basin. There are some promising pros-

pects in the basin, some having ore of good grade on the dump ready for shipment.

Colin Munro has returned to Telkwa from up Goat creek, where he had been examining the mining property he and Frank Martin have under bond from Loring and Forest. Some Butte men are being interested in the property, on which some work will probably be done this fall.

OMINECA.

R. D. Featherstonhaugh, superintendent of the Omineca Gold Mines, has left Quartz creek for Vancouver, having completed the season's work.

F. E. Groffman, of the Omineca Gold Mines, on his way to Hazelton from Quartz creek met 120 pack animals, most of which were carrying supplies for the companies operating in Manson or Omineca river. He expressed satisfaction with the results of the season's prospecting done by the company with which he is connected.

J. M. Davidson, who was in Hazelton lately, is said to be a hydraulic engineer on his way to Silver and Tom creeks, on which G. H. Knowlton, of Vancouver, and associates have a large area of hydraulic ground which is regarded as being valuable.

A NEW PLACER FIELD.

The Interior News, Aldermere, says, under date Sept. 13: The discovery of placer gold on Sibolla creek, a tributary of Tahtsa river, is causing much excitement, and scores of people have already left for the new diggings, which are situated some 80 miles southwest of Aldermere. Last week K. Price, the discoverer, brought to town an ounce of coarse gold which he panned from the creek bed. Immediately a number of prospectors, many of them experienced placer miners, set out for the scene of the new strike, and during the last day or two several of them have returned. Nearly all speak favorably of the district, and a few of them brought nice samples of gold. Whether or not gold exists there in paying quantity cannot yet be definitely stated.

QUEEN CHARLOTTE ISLANDS.

The Queen Charlotte News of September 27 says: "We are pleased to report that the G. T. steamer Prince Albert has a large consignment of machinery and supplies for the Tassoo Mines, that will be delivered tomorrow. It includes aerial tramway, terminals, etc., compressor plant, drills, lumber and supplies. The machinery is to be installed at once, so that returns may soon be obtained. This means the employment of a number of men in and out of the mine. It begins to look as if there are brighter days in store for the metal-mining industry on these islands, and we are confident everyone will wish the operators all success. The development work so far done on the Copper King property, at Copper bay, is most promising."

It is reported that a good seam of coal has been found at Wilson's camp, at the headwaters of Yakoun river, Graham island, but its extent and quality have not yet been determined. It is encouraging, however, and it is believed to be of good commercial value.

THE MINERAL DISPLAY AT THE VANCOUVER EXHIBITION.

By H. B. Brown.

The mineral exhibit at the fourth exhibition of the Vancouver Association has been the most successful in its history, from interest shown and from the value of the exhibits.

In the gathering of these exhibits special effort has been made to secure not only a representative showing of the metalliferous minerals from the industries already established, but the raw material on which new ones were likely to build.

At our second exhibition we had showings of coal, lime and shale from the B. C. Portland Cement, Ltd., of Princeton. Today we have a showing of the commercial cement as turned out at their 500-barrel mill, and an exhibit showing the different stages of the process of manufacture, and the test blocks showing the breaking strain.

As we pass down the aisle we come to the exhibit of The Associated Cement Co. (Canada), Ltd. of Victoria. J. B. White and Bro., who have financed this project, are well known in the English business world, and their success is merited for their faith in the province. Here also we see the method of manufacture, but by the wet method of the old country. The test blocks show its success. One thousand barrels per day are being added to the supply of home-made cements.

The exhibit of polished marble by Wm. Astley and associates from Texada island attracted much attention. Here was a display of twelve distinct markings and colorings that would compare with the Italian and Tennessee marbles; quarried 50 miles from Vancouver, sawn and polished in the city, of a quality for which over \$1,000,000 had been paid out in the last three years.

The B. C. Salt Co., of Prince Rupert, had a display of butcher table and bulk salt from the salt wells of Kwinitsa. B. C., on the Skeena river, that would compare with any like product in any part of the world.

The Grand Trunk B. C. Coal Co., Ltd., had samples of coal, coke, gas, tar, and ammoniacal liquor, products from their property in the Hazelton district, located on the main line of the G. T. P., it should prove of great value to the owners and the general public.

The Powell River Paper Co., Ltd., made an exhibit of finished newspaper, the plain ground pulp, the sulphide pulp hemlock and spruce woods from which the paper is made, as well as the chips ready to be treated. The large photos of the works and the village gave some idea of this great industry that had come into being without any blowing of trumpets.

Gypsum from the Similkameen, on the line of the Great Northern railroad, was shown in its raw state, as land plaster, and calcined in the white and brown plaster; with the completion of the railroad the coast should be supplied from these deposits.

The Granby Mining and Smelting Co. had an excellent display of ores from Granby Bay properties, where they are

building their smelter, covering the different grades and types, as well as ores from their properties at Phoenix.

The Consolidated Mining and Smelting Co., of Trail, displayed pig lead, manufactured lead pipe, silver-lead bullion, and ores from the mines being operated by them. Their showing of Rossland ores was fine, and taken in connection with those of the south belt were the centre of attraction.

The ores from Copper Mountain, near Princeton, under bond to the B. C. Copper Co., of Greenwood, came in for much attention.

The boards of trade from the different districts are beginning to recognize the importance of our exhibit as a means of publicity; but blocks of ore, not hand samples, are what appeal to the busy mining man, who at a glance may decide what district he should visit. Dawson had a large exhibit of gold quartz ores; White Horse, copper ores; Hazelton, silver-lead ores; Portland Canal, typical ores from their district.

The Monarch mine at Field, the second oldest mine to be placed on record in the province, had ores and concentrates to show their methods of ore dressing, and received much attention from those who knew of the early struggles of the mine under varied ownerships and methods of treatment. It was left to Vancouver people to make it a mine and a financial success.

Britannia Mining and Smelting Co. showed their low-grade concentrating ore, jig concentrates, as well as fine concentrates from the new Mineral Separation process.

Bowena Copper Mines, Ltd., of this city, had ores from Bowen island that attracted notice from people posted on conditions on Howe sound.

Texada and Valdez islands displayed gold-copper ores, but it was left to the free gold quartz ores of Texada to hold the crowd. Twenty pounds of ore was shown from the Cracker Jack property that had an average gold content of over one hundred dollars to the pound.

The Surf inlet ores attracted the usual notice.

Iceland spar from the Similkameen divided attention with the diamond, platinum, gold ores of the district.

The Oregon, Kingston, Pollock, Brown-Bulldog represented Camp Hedley, Kamloops, Ashcroft, Lillooet and Bridge River, on the C. P. R., made exhibits of merit. Chilliwack and Hope had some fine gold copper as well as silver lead ores.

The Boundary was represented for its entire length with ores from their shipping mines as well as their well developed prospects. The exhibit should have been visited to get an idea as to the importance of the industry in the province.

The mineral exhibit of the Vancouver Association is housed in the finest building of its kind in America, and it is up to the mining men of this province to place within its walls a collection of minerals to correspond with the importance of the industry. To the visitor who views the exhibit, it seems most complete; but those who know the extent of our mineral conditions miss the ores from some important districts.

Publicity of the natural resources of our mineral districts is the first step to obtain aid to develop them. Our home capital is not sufficient to exploit them, and where is a better spot to interest capital than at the point where the world's business people meet?

Vancouver is the gateway to investment in the province. In this city capital from all over the world has been invested. Here the sight-seer and globe-trotter stop, and are staggered by the enterprise they see on every hand.

No section of country in America was ever subject to so little criticism as to conditions of development as this province. British Columbia investments have the first call on the capital of the world today, and if united action on the part of the mining people is secured we will be able to hold that advantage.

With that end in view an effort will be made to give the coast the greatest mineral show that has ever been gathered in Canada for the fall of 1914, and from this will be selected the ores for the Panama-Pacific Exposition in 1915. As a special attraction there will be a copper smelter in operation in San Francisco ready to test the world's copper ores. It is proposed to hold a Mining Carnival in our province that will hold attention of the outside world. Our old-time placer camp will be reproduced with all its features, the arrastra will be operated by the side of the modern stamp mill, and tests made of ores for the mine holder. United action on the part of the mine-owners will make this a success.

H. B. BROWN,

Director Mines and Forestry, Vancouver.

PROPOSED MINERAL EXHIBIT FOR VANCOUVER AND SAN FRANCISCO.

At the close of the Vancouver Exhibition early in the present month, a meeting of a number of gentlemen interested in British Columbia mining was held in the Forestry Building, for the purpose of discussing arrangements for the mineral exhibit in Vancouver next year, and at the San Francisco Exhibition in 1915. After details had been gone into, a committee composed of the following gentlemen was nominated for the purpose of taking up the matter with those interested: Messrs. H. B. Brown, J. C. Murray, Wm. Astley, Newton Emmons and Prof. Odium. A meeting will be called in the near future for a general discussion of the subject. The following paper by Mr. H. B. (Bulldog) Brown, was read at the meeting:

The time is at hand to decide what part the mining interest of the province is to take in the exhibition schemes that are sweeping toward the Western coast to take advantage of the flood of travel that will have the Panama-Pacific Exposition at San Francisco its destination for 1915. That this will be the greatest gathering of the world's people who can do things ever assembled in the West goes without saying. To hold the attention of these visitors to the ideal conditions for business, or as a desirable place of residence, is a matter of

vital importance for the development of the province.

Today we are in the investment eye of the world, but to hold that position we must be able to remain in advance of the efforts that are being made in the States to take advantage of these conditions.

San Diego is to hold an exhibition, to run for 12 months, that will show the progress of man from the beginning, in the arts, industries and science, of the world; and inducements are offered those who have raw materials that can be made of use to the world to be present with their exhibits, to impress their importance on the visitors.

Denver is to stage an exposition during the same season, and has arranged for the greatest mineral exhibit ever gathered in the State.

Galveston, Texas, will also have an exhibition that will present the claims of the South for a portion of the benefits to be derived from the great influx of people.

All of these points have got to create conditions that will attract the investing public. British Columbia has those conditions today, and can hold that position if we will make a united effort to present our claims and show our natural resources. This province does not need boomers. The truth told of our wonderful conditions, and we will find the financial aid for the development of our latent industries. Our railroads can be depended upon to secure the touring of the visitors, and allow them the proper stop-overs to view our conditions. This done, it is up to our people to secure the benefit.

The Mines.

The first great industry of the province, thanks to the new railroad construction is capable of an extensive development under transportation facilities that appeal to careful managers. The united efforts of the Government, of our municipalities, our boards of trade, and each and every man, would enable the province to receive the full benefit to be derived from these visits.

My connection with the mineral exhibit of the Vancouver Exhibition Association has put me in direct touch with the prospectors, mine-owners, and would-be purchasers in the last 12 months. In discussions of our exhibits, the sentiment has been that the mine-owners should make an exhibit, a gathering of ores and products for industries on the coast such as had never been collected; bring in the men who have made these strikes and put them in touch with those seeking information.

With this in view, plans are being formed to hold a Mining Carnival during the season of 1915 that will reproduce the old-time mining placer camp in all its details, the miners at work, the clean-up, and the social conditions. The lode mining will be shown in its different stages, with the old-time arrastra in operation, and by its side the modern stamp mill. The manufacturers of mining machinery have signified their co-operation in the mat-

ter, the mine workers will have drill and mucking contests, power drills will be in operation, and the visitor will see a picture of mining only observed by the mining engineer who visits the world's mining camps. With the proper publicity, this should prove a great attraction to all who are interested in progress; and if this same line will be carried out in the other lines of industry, we would have a practical exhibition that would appeal to thousands of visitors and result in drawing much wealth to our province.

This, in brief, gives an outline for a programme for 1915, for 1914 we must bring on the work of preparation and gather our material for the coming event.

This matter has been under discussion with some of the most active men in the transportation, publicity and mining line, and the conclusion has been we can make a success of it if the mine-owner and prospector will come in. To this end we shall give premiums for rare ores that will result in their being brought in.

Let us have a free discussion of the matter.

GRANBY BAY, OBSERVATORY INLET

On August 31 a party of about 30 members of the International Geological Congress visited Granby Bay, Observatory Inlet, near which is situated the Granby Consolidated Co's Hidden Creek copper mine. These visitors were part of the larger excursion party which went north from Vancouver to Prince Rupert and thence to Yakutat bay and the Malaspina glacier. Granby bay had been visited by Mr. R. G. McConnell, of the Geological Survey of Canada, in the summer of 1911, and he thereafter prepared a report on his investigations there. For the Guide Book, printed for the use of the excursionists, Mr. McConnell wrote the information relative to Granby bay that is here reprinted. While much of what was placed at the disposal of the visitors doubtless applies today, it should be kept in mind that since Mr. McConnell's visit of two years ago the Granby Co. has done much diamond drilling and development work; so much so that the estimate of developed ore is now that about 8,000,000 tons is available. The figures relating to the work done and the sizes of the orebodies must, therefore, be regarded as indicating the position two years ago, not as that of today. Mr. McConnell's description follows:

Introduction.

"Observatory inlet is a deep fiord paralleling the lower portions of Portland canal and connected with it by a passage north of Pearse Island. Its shore lines are more irregular than usual, and near its head it divides into two branches, the more easterly of which cuts through the gigantic belt of the Coast range and terminates in the dark sedimentaries bordering it on the east. At the junction of the two arms the inlet expands and numerous rocky islands project above the surface of the water. Granby bay is situated west of the expanded portion.

Geology.

"Observatory inlet is a deep fiord parcourse in the Coast range and the rocks exposed along it consist mostly of the greyish granitoid rocks characteristic of that range. Schists outcrop along the lower portion, and at Granby bay an important area of argillites, mineralized in places, occurs as an inclusion in the granitic rocks.

"The argillaceous area at Granby bay has a maximum width of nine miles. It is surrounded on all sides by granitic rocks and is considered to be an undestroyed and deeply sunken portion of the old roof of the Coast range batholith. The basin is of great depth as the rocks of the inclusion are exposed from base to summit of the mountains more than 5,000 feet in height and they must extend to a considerable depth below the present surface.

"The argillites in the vicinity of Granby bay are coarsely bedded, hard, compact rocks usually altered to some extent and occasionally passing into mica and quartz mica schists. The ordinary fine-grained dark variety alternates in places in thin bands with a lighter colored, coarser-grained and more felspathic type made up of tufaceous material. Limestones, in small non-persistent beds, are occasionally present, and near the southern boundary of the inclusion, altered greenstones largely of pyroclastic origin are prominent.

"The argillites are seldom, and only over limited areas, cleaved into slates. They are folded into a number of anticlines and synclines striking approximately east and west or parallel to the long axis of the area. The dips, as a rule, are regular and comparatively low, although locally the strata are greatly disturbed. No faulting on a large scale has been detected.

"Dikes cutting the argillites are numerous throughout the area. Two sets, one preceding, and the other subsequent to, the mineralization of the region, have been distinguished. The former are genetically connected with the enclosing granite rocks, and include a number of types ranging from quartz porphyries and pegmatites to diorites. The latter are usually lamprophyric in character.

Mineralization.

"The argillaceous rocks included in the granites at Granby bay are heavily mineralized at a number of points. The most important deposits so far discovered occur on a low iron-stained hill north of Granby bay, enclosed between two branches of Hidden creek. The deposit has been explored by a tunnel driven straight into the hill for a distance of about 1,000 ft. by numerous short drifts, by surface trenching, and by diamond drill boreholes. The mineralized area is proven by the various workings to be of great extent, although it has not yet been fully defined. In shape it forms a right angle. The smaller arm, known as the first orebody, has a northeasterly strike and dips to the northwest. It has been traced from the main tunnel in a southwesterly direction for more than 600 ft.,

"The examination of the deposit by the author was made in 1911. Since then much additional exploratory work has been carried on."

the width averaging about 160 ft. or, including a siliceous band which borders it on the northwest, nearly 200 ft. The longer arm holding the second orebody has been traced in a northwesterly direction for a distance of 1,500 ft., with an average width of about 400 ft. The deposit has been proved by a borehole to a depth of 514 ft. below the main tunnel or approximately 900 ft. below the surface outcrops on the hill.

"While only a portion of the large area described contains valuable minerals in sufficient quantities to constitute commercial ores, the original rocks are everywhere either completely altered into greenish, or less commonly brownish micaceous schists, or replaced by quartz and iron and copper sulphides. The transition from the dark, slightly altered argillites which constitute the country rocks, is usually fairly abrupt, often occurring in a few inches.

"A conspicuous feature of the deposit is the presence of a zone of whitish quartz schists, practically strongly silicified argillites, traceable part way round it. This siliceous zone forms the northwestern boundary of the southwestern or smaller arm, crosses the deposit, then bending at right angles continues to the northwest as the northwestern boundary of the larger arm. It was not observed on the southwestern border of the larger arm nor on the southeastern border of the smaller arm.

"The rocks in the siliceous zone vary in the amount of silicification undergone. In most places they are nearly pure quartz schists, but occasionally the zone consists of alternating dark and white bands. The width of the zone ranges from 30 to 60 ft. or more. The dip, where it skirts the smaller arm and crosses the deposit, is to the northwest, but after bending to the northwest the dip, as shown by the boreholes, changes to the northeast. It thus forms the hanging wall of both arms. The metallic minerals present consist mainly of iron pyrites, some of it cupriferous, pyrrhotite, and subordinate quantities of chalcopyrite. A little hornite, evidently secondary, was found at one point. The principal non-metallic constituents are quartz, some calcite, a greenish micaceous schist, probably largely chloritic, some brownish micaceous schists, and occasionally some hornblende.

"Pyrite is the most abundant metallic mineral present. It usually occurs in a granular condition, and in places near the surface breaks down into an iron sand. It is always associated with more or less quartz and large areas consist of pyrite grains separated by a thin siliceous matrix. It also occurs in grains and small bunches distributed through the secondary schists. Its distribution through the mineralized area is irregular, some portions containing only a small percentage, while others consist almost entirely of sulphides and quartz. The main tunnel, started some distance down the slope from the mineralized area to gain depth, passes through 380 ft. of argillites, all somewhat altered and containing occasional grains and small bunches of pyrites, then through a pyritic zone 200 ft. wide, becoming very siliceous toward the northwest border, then through a greenish schistose zone with some quartz and pyrite 240 ft. wide, beyond which is a second pyritic area,

which continues to the end of the tunnel 120 ft. A drift to the left from a point near the end of the tunnel running about north for 300 ft. shows the continuation of the pyritic area for that distance, the breast being in granular sulphides, mostly pyrite, embedded in a siliceous matrix. A drift to the left passes through sulphides and quartz for 100 ft., then through greenish chloritic schists, only slightly mineralized, for 120 ft.

"The comparatively barren interval separating the two pyritic areas in the tunnel is not apparent on the surface, some of the ground overlying the lean portion being well mineralized with sulphides.

"Pyrrhotite, while much less abundant than pyrite, is common throughout the greater part of the mineralized area. It occurs intermingled with the pyrite, and also forming comparatively large masses usually specked with chalcopyrite.

"Chalcopyrite in grains, small aggregates of grains, and in thin layers usually accompanies the iron sulphides where the replacement is complete or nearly so, and also occurs in small quantities scattered through portions of the schistose areas. The proportion present, while variable, is always small and in certain areas seems to be absent altogether. The chalcopyrite is associated so intimately with the iron sulphides that there is little doubt that both are the products of the same period of deposition.

"Bornite was found at one point, but only as a surface alteration mineral, and it does not occur, so far as known, as a primary mineral of the deposit.

"Among the non-metallic minerals, quartz is the most prominent. A wide siliceous zone crosses and bounds portions of the mineralized area, and the large sulphide areas are all more or less siliceous. Calcite occurs occasionally, but is not prominent. Portions of the area included in the mineralized zone on the accompanying map consist of greenish micaceous schists often highly siliceous. These contain insignificant quantities of sulphides in some places and are nearly barren in others.

"The iron sulphides in the Hidden Creek mine contain very low value in the precious metals and the commercial value of the ore depends mainly on its copper content. Chalcopyrite usually accompanies the iron sulphides, but in variable amounts. Some areas are nearly barren, while others contain sufficient quantities to constitute a low grade, and over limited areas a medium-grade, copper ore.

Extent and Origin of the Orebodies.

"The most important body of commercial ore so far outlined in the boring operations of the company occurs southeast of the siliceous zone previously described as bordering the shorter arm of the deposit on the northwest and continuing along the larger arm. The siliceous zone is fringed by a band of ore usually from 20 to 25 ft. in width and already traced for a distance of nearly 1400 ft. A vertical borehole from the main tunnel apparently proves it to a depth of 514 ft. below that level and it extends to the surface above, a variable distance, depending on the contours of

the country, but probably averaging about 200 ft. The huge tonnage expected from this orebody will undoubtedly be greatly supplemented from other portions of the mineralized area. Workable areas are known to occur at a number of points, but the definition of their extent and quality awaits further exploration.

"The mineralized area at the Hidden Creek mine occurs in a large predominantly argillaceous area surrounded and doubtless underlain, although at a considerable depth, by granitoid rocks, and cut by dikes and stocks belonging to the same period of igneous intrusion. The argillites were irregularly compressed and folded at the time of the invasion, and the deposit probably occupies an area more than ordinarily crushed and fractured, although this has been masked by subsequent alteration and deposition and is not apparent. A wide, broken zone, rather than a single fissure, is conceived to have afforded the means by which heated siliceous waters containing iron and copper sulphides in solution ascended from the underlying batholith, altering the argillites in their upward passage and replacing them with silica and sulphides as the pressure and temperature conditions became less severe.

"An origin of this kind would ally the deposit genetically with the loosely defined contact metamorphic group, but the ordinary contact metamorphic minerals, including the iron oxides, were not observed and are either absent altogether or are present only in very small quantities."

VISITOR PLEASED WITH PORTLAND CANAL.

The Portland Canal Miner of the 20th Inst. says: Hans E. von Schuecking, representing Alvo von Alvensleben Ltd., of Vancouver, after spending a week as the guest of General Manager W. E. Elmen-dorf of the Portland Canal Tunnels Ltd., left for Prince Rupert on the last boat en route to Atlin and Telegraph Creek. The visitor was here on a combined business and pleasure trip, and was very favorably impressed with the camp and townsite.

Speaking of his visit to the Miner, immediately previous to his departure south, he said: "I have been gathering information and data regarding the potential wealth of the camp and the Naas river valley. My impressions of the country are most favorable, and the work being undertaken by the Portland Canal Tunnels, Ltd., gives every promise of success. At the time I left the tunnel the bore was then in over 2,000 feet, and had already passed through one vein of ore, carrying considerable iron, and measuring some nine feet. According to the information I received from the general manager it is expected that the main Glacier Creek vein series—the objective point—will be encountered in a very short distance now."

Mr. von Schuecking will return later on in the fall to examine the land holdings of his firm in the vicinity of Ayianch and may also proceed into the interior along the new Groundhog pack trail, now under construction.

LARGE MINERAL EXHIBIT FROM PORTLAND CANAL.

The Portland Canal Miner of the 20th inst. says: On the Thursday boat there was shipped to Prince Rupert one of the largest collections of mineral specimens ever got together in a mining camp. The ore will be entered for the grand district prize for minerals offered at the forthcoming Prince Rupert exhibition, opening next Wednesday. Besides the district entry there will be entries for the best collection of gold, silver, galena and copper-gold ores, for the best individual collection of prospectors' specimens and for the largest individual display representing one mine or prospect.

PROVINCIAL OPERATOR VISITS PORTLAND CANAL.

William R. Tonkin, president of the Fish Creek Mining Co., accompanied by Superintendent James Harris, arrived from Seattle on the Thursday boat on his annual trip of inspection to the property, says the Portland Canal Miner of the 20th inst. With him is also John McMartin and wife and M. L. Gordon, P.L.S., of Vancouver. Mr. McMartin has been associated with Mr. Tonkin in the Fish Creek Mining Co. for the past three years but this is his first visit to the camp. Mr. Gordon is here to complete some surveying on Mr. Tonkin's Bear River property preparatory to Crown granting the same. Messrs. Tonkin, McMartin and Harris left yesterday for Fish Creek and will doubtless visit other claims up the Salmon river before returning south to Prince Rupert next week, where they will stop over to see the exhibition.

COAL PRODUCTION ON VANCOUVER ISLAND.

The statement has been made repeatedly by leaders of the striking coal miners on Vancouver Island, that but little coal has been produced at the mines of the Canadian Collieries (Dunsmuir) Limited, since the union miners struck work in September, 1912. The following figures show the production at that company's Cumberland and Extension mines, respectively, during eight months of the current year to September 1:

Cumberland Extension			
1913—Month	Long Tons	Long Tons	
January	27,429	1,022	
February	29,516	2,471	
March	36,313	3,862	
April	38,225	4,433	
May	40,087	5,012	
June	42,661	6,020	
July	48,407	7,337	
August	47,815	3,254	
Totals	310,453	33,411	

In the corresponding period of 1912 the output was 397,312 tons; for 1911 it was 353,665 tons. The output at Cumberland mines for September was 52,187 tons; for the last day of that month it was 2,337 tons. The average per day for 26 working days was 2,007 tons. Work was suspended at Extension during the first half of August, but it was resumed recently and coal is now being mined there.

THE TRAIL EXHIBIT.

The Nelson Daily News of the 25th inst. has the following appreciation of the exhibit of the products of the Trail smelter at the Nelson fair this month:

An exhibit at the fair that should be of particular interest to all visitors is that of the Consolidated Mining & Smelting Company, which has on view samples of the product of its smelter and refinery at Trail, as well as a model illustrating some of the methods employed in the latter. There is shown lead and silver in as pure form almost as it is possible to obtain them, copper sulphate, another product of the refinery, lead pipe of different sizes manufactured at Trail and other things which should interest the people of a mining country. For obvious reasons the company did not send over any of the gold bricks which it turns out at Trail and which are each worth \$10,000 and upwards.

Not only has the company sent over this excellent exhibit, but it has also sent a man in charge of it who is only too willing to give any and all information possible in regard to the smelting and refining works at Trail. It is well worth anyone's while, who has never had an opportunity of going through the works themselves, to have a talk with the man in charge of the exhibit at the fair and have him describe the various processes.

The staging of this exhibit here illustrates the interest which the Consolidated company takes in the institutions of all parts of this country. The Consolidated company is not a Trail, nor a Rossland, nor a Nelson institution. In the spirit of its management it is as big as the country itself, while its interests spread in many directions. The exhibit now on view here is possessed of great educational value to any one who cares to inquire, and Mr. R. H. Stewart, the general manager of the company, is to be complimented upon the public spirit in staging it, something which has been done only at considerable expense and trouble.

SOME FEATURES OF RECENT EXHIBIT OF TRAIL SMELTER'S WORK.

The Rossland Miner of the 24th inst. says:

Mention was made in last issue of the remarkable exhibit, at Trail fair, of the Canadian Consolidated Mining and Smelting Company. Samples of ore were there coming from all the mines owned by the Consolidated, and from many shipping to the smelter, at Trail, from other points in B. C. and Washington.

The ore was shown as it came from the mine to the smelter, and samples of the resulting substance at each stage of treatment. After being crushed it goes to the roaster, then in clinker form to the furnace, where, with the fluxes of coke and rock, it is smelted to bullion, running from the furnace.

The bullion runs into a pot, and, while still in a molten form, the anodes are made and placed on cars and shipped to the refinery for refining.

The anodes, which are gold, silver and lead, the last-named metal in the

proportion of 75 per cent., are then placed into tanks of acid and the lead is plated on the cathode sheets, which are made of pure lead. Samples of these were shown. The lead, when refined, is taken to the extreme end of the tank room, where it is dumped into the melting pots and then melted down, pumps being placed into the pots, the lead is pumped out, runs into the moulds and placed in the cars.

The slime which is left on the anodes is washed and dried and is then ready for the Dore furnace, where it becomes metal. This metal is separated, the silver from the gold. The silver goes to the furnace, is melted, dipped and run into moulds, as per exhibit, 1,250 ounces to the bar and from 56 to 76 bars to a shipment. The bulk of this goes to China, the bars on view in the fair building being already stamped for Hong Kong, and awaiting shipment to the banking corporations there. The gold goes to the Dominion assaying office at Ottawa.

The bluestone, which was included in the exhibit, is a by-product, and is shipped mostly to the prairie provinces for treating smut in wheat. It is also used by electrical companies in the making of electric batteries.

Samples of lead piping were also shown.

COAL AND OIL SHOWINGS ON QUEEN CHARLOTTE ISLANDS.

The Queen Charlotte Islander of the 24th inst. says:

Mr. J. G. Johnston, the hardy prospector, who a short time ago made a trip to London, Eng., and was very successful in interesting capital there in Graham Island coal lands, returned to Massett last week from a trip to the West coast. Mr. Wolseley, a noted coal and oil expert, accompanied Mr. Johnston on the trip. For the past three weeks they were engaged examining coal and oil properties on the West coast, belonging to a company which Mr. Johnston promoted and is heavily interested in.

Mr. Arthur Robertson took the party in his launch to West River, which is nearly ten miles south of the company's property, for the purpose of the geologist to see the dip and strike of the formation seams which are particularly well exposed there. From West River, Mr. Johnston and Mr. Wolseley moved north until they came to the company's holdings, where, after careful study and prospecting, their opinion is that there is a large area of the finest quality of coal on the property, which extends from North Island south for ten miles, and comprises nearly one hundred square miles of land. They brought back with them about 300 lbs. of coal samples taken from the property.

The geologist also made a careful examination for oil indications and is confident that the same oil field that is being prospected at Otard Bay extends north through the company's property. The oil shale and coal samples which they are taking south is very strong proof in support of their opinions.

Mr. Johnston and Mr. Wolseley left on the Prince John on Thursday for Prince Rupert, where they expect to take in the exhibition before going south.

GRANBY CONSOLIDATED CO'S PRODUCTION.

The Grand Forks Gazette on September 6 printed the following information relative to the Granby Consolidated Mining, Smelting, and Power Co's production during the eight expired months of 1913:

Smelting more than 800,000 tons of ore and making nearly 15,000,000 lb. of blister copper during the eight months ending August 31, the Granby Consolidated Mining, Smelting and Power Co. is keeping close to the splendid record of production which it attained last year. The figures for this year to date are slightly less than those for the corresponding period of last year, occasioned through furnaces being out for repair a greater number of days. Following are the figures for the eight months of this year:

	Blister Cop.	Granby	Foreign	Treat.
	Lb.	Tons	Tons	Tons
Jan.	1,828,245	100,881	1,268	102,149
Feb.	1,740,000	96,971	886	97,857
Mar.	2,020,000	107,931	940	108,871
April	1,806,452	104,848	585	105,433
May	1,828,000	106,755	1,027	107,782
June	1,789,000	103,324	1,184	104,508
July	1,654,000	99,889	859	100,748
Aug.	1,827,300	99,641	2,081	101,722
Totals	14,492,997	820,240	8,830	829,079

After a trip of 3,500 miles from Dawson City, Yukon, J. Nielson, a Norwegian, is now in the Provincial Penitentiary at Portsmouth, Ontario, to spend twenty years for attempting to blow up a Guggenheim gold dredge on the Yukon river, through spite over being discharged. Two members of the Northwest Mounted Police had the prisoner in charge on the journey down, which occupied 15 days, arrangements having been made in advance for close steamer and train connections. It was decided that the Ontario prison was most suited to Nielson, as it has an insane department, and the prisoner is thought to be a little out of his head.

A mining excitement was occasioned in Gloucester and Franklin camps on the North Fork of Kettle river by a rich strike on the Union mine. A rush to stake fractions and extensions resulted.



CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under expired Timber Licences Nos. 39195 and 38196, situated in the vicinity of Powell Lake, New Westminster District, is cancelled, and that said lands will be open for entry by pre-emption on Monday, the 3rd day of November, 1913, at the hour of 9 o'clock in the forenoon.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B. C.,
30th July, 1913.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve covering lands formerly held under expired Timber Licences Nos. 39195 and 38196, situated in the vicinity of Powell Lake, New Westminster District, is cancelled, and that said lands will be open for entry by pre-emption on Monday, the 3rd day of November, 1913, at the hour of 9 o'clock in the forenoon.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B. C.
aug. 2

nov. 1



NOTICE OF CANCELLATION OF RESERVE.

NOTICE is hereby given that a reserve covering certain lands situated in the vicinity of North Thompson River, Kamloops District, formerly held under expired Timber Licences Nos. 11267 and 13758, notice of which appeared in the B. C. Gazette on the 27th of December, 1907, is hereby cancelled and said lands will be opened to entry by pre-emption on Monday, the 8th day of December, 1913, at 9 o'clock in the forenoon; application to be made to the Government Agent at Kamloops, B. C.

ROBT. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B. C.,
27th August, 1913.

aug. 30

oct. 25



NOTICE OF CANCELLATION OF RESERVE.

Notice is hereby given that a reserve, the notice of which appeared in the B. C. Gazette of December 27th, 1907, is cancelled, in so far as it relates to lands formerly held under Special Timber Licences Nos. 32710, 38000, 40345, 10419, 40346, 40127, 31332, 11693, 40347, 40349, 40129, and 33317, all in Kamloops Land District, and the said lands will be open to entry by pre-emption at the hour of 9 o'clock in the forenoon on Friday, October 17th, 1913.

ROBERT A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B. C.,
15th July, 1913.



NOTICE OF CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under expired Timber Licence, No. 37459, notice of which appeared in the B. C. Gazette on the 27th of December, 1907, is cancelled.

The said lands situated on Lasqueti Island, and covering portions of Sections 11, 12, 14 and 15, will be open to pre-emption entry at 9 o'clock in the forenoon on Monday, October 20, 1913; all applications to be made for legal subdivisions of said Sections 11, 12, 14 and 15, Lasqueti Islands, which are within the boundaries of lands formerly covered by said licence.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B. C.,
12th July, 1913.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve, notice of which appeared in the B. C. Gazette on the 27th of December, 1907, is cancelled in so far as it relates to lands formerly covered by Timber Licence No. 41206, known as Lot 456, Sayward District, and same will be opened to entry by pre-emption on Monday, the first day of December, 1913, at the hour of 9 o'clock in the forenoon.

The lands in question will shortly be subdivided into suitable parcels for pre-emption, and all applications must be made in accordance with such subdivision, particulars of which will be available at the office of the Government Agent, in Vancouver, to whom applications must be submitted.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B. C.,
12th August, 1913.

aug. 16

nov. 15

For the third time in 1913 the Hedley Gold Mining Co. have announced a dividend of five per cent., quarterly, on the outstanding stock of the company, representing a distribution of \$60,000 profits from the operation of the Nickel Plate mine for the last quarter. These profits now distributed for the quarter do not represent the entire profits earned during the last three months and available for distribution in dividends, but in merely the carrying out of the general policy of the company to distribute that amount quarterly.

GREEN LAKE**Mining and Milling
Company, Limited**

Office—806 Rogers Block,
Vancouver, B.C.
V. LLOYD-OWEN, SEC. TREA.

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**MORTGAGEES HAVE PRIORITY OF
CLAIM.**

On September 23 the Nelson Daily News published the following:

Holding that it is impracticable in the case of a mine to say how much or how little the property has been improved by the employees, Judge Forin in a judgment delivered yesterday afternoon decided in the case of Fownes et al vs. the Kootenay Gold Mines that the claims of the mortgagees take priority over those of the lien holders under the Mechanics Lien Act. Section 9 of the act gives the mortgagee priority of claim except over improvements which may have been made to the property in question. Between \$5,000 and \$6,000 is involved in the claims of the 32 employees who secured the lien against the Kootenay Gold Mines company, which owns the Granite-Poorman mine near Nelson. H. A. Coomber of Boswell is first mortgagee, and Harold Selous of Nelson and W. J. Goepel of Victoria hold a second mortgage on the property. The decision of his honor is regarded as of great importance to mining men, miners and others interested in the industry. The judgment follows:

"There is no doubt that the main object of the Mechanics Lien Act was to give every person a lien for work and services upon or in a mine, building, etc., but where prior mortgages existed the provisions of the section dealing with mortgages (section 9) are inadequate to give relief to lien holders of the class before us, unless in the proceedings at the trial the increase in value of the mortgaged premises can be estimated. It is not contended that the work done in this instance increased the value of the premises, and section 9 would have to be read out of the act before judgment could be given as against the mortgagees' interests.

"A high judicial authority has dealt with this in Salmon vs. Duncombe 11 App. Cas. 627, where we read: 'It is a serious matter to hold that where the main object of a statute is clear it shall be reduced to nullity by the draftsman's unskillfulness or ignorance of law.' I must, however, hold, that insofar as work in taking out ore, unless in strictly development work, the miners and other employees at a mine cannot enforce their liens against the premises or property as against the interests of the mortgagees. I find that the lien holders have proved their claims as appears in the evidence

INDEX

Subject:—	Page
Economic Minerals and Mining Industry of British Columbia.....	5
Mineral Production	10
Provincial Mining News.....	11
Personal and General.....	15
International Geological Congress.....	18
New York Mining Expert on Shushanna Gold Field.....	19
Editorial	20
Metal Markets	21
Coast and Island Mining—	
Portland Canal Tunnels, Ltd.....	22
Review of British Columbia Coast Mining	23
The Mineral Display at Vancouver Exhibition	26
Proposed Mineral Exhibit for Vancouver, San Francisco.....	26
Granby Bay, Observatory Inlet.....	27
Visitor Well Pleased with Portland Canal	28
Large Mineral Exhibit for Portland Canal	29
Coal Production on Vancouver Island	29
The Trail Exhibit.....	29
Coal and Oil Showings on Queen Charlotte Islands	29
Granby Consolidated Co.'s Production..	30
Unionism and Militia.....	33
Labor Unions	34
"Make it a White Man's Country".....	35
Prospectors' Opportunity	36

and direct that the same be paid by the defendant company forthwith."

Here the judge inserts a list of lien holders with the respective claims. The judgment continues:

"And in default of payment forthwith I direct that the lien holders may proceed by sale or otherwise as may be further directed, as agreed upon by all parties interested, against the equity in the premises owned by the defendant company."

During the second seven days of September the Granby smelter treated 24,167 tons of ore, of which amount 23,929 tons were from the Granby mines and 238 tons from foreign properties. In the same period Granby shipped 348,000 lbs. of blister copper.

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NOTICE OF CANCELLATION OF RESERVE

NOTICE IS HEREBY GIVEN that the reserve existing on lands embraced in Township 24, Rupert District, notice of which, bearing date June 12, 1912, was published in The B. C. Gazette on June 13, 1912, be cancelled to permit of the pre-emption of said lands under the provisions of Section 10 of the "Land Act" on and after 9 o'clock in the forenoon of Friday, October 17, 1913; all such pre-emption entries to be made in accordance with existing surveys varying in area with a maximum of 40, 80 or 160 acres to each pre-emption, as the said lands may be subdivided by a survey.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B. C.
9th July, 1913.

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Snowstorm22		
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A copy of the constitution and by-laws of the Association will be sent to every old public school boy who is not already a member thereof.

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UNIONISM AND THE MILITIA.

(Calgary News-Telegram)

Those who adversely criticize military intervention for the preservation of life and property from the hysterical outrages of civilians should well weigh facts before passing a wholesale condemnation upon tactics that have been forced upon the community. It is all very well for trades unionists in Brandon and other places a thousand miles away from the seat of socialistic outrages to sit in solemn conclave, and to condemn the presence and action of the militia in the island of Vancouver, and to threaten to

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"blacklist" all militiamen who belong to such unions unless they allow their patriotism to be overwhelmed by their unionistic principles; but those who were witnesses of the doings of the mobs at the various British Columbia colliery districts a fortnight ago are firmly convinced that but for the presence of the military forces and their gatling guns, bloodshed and murder would have been added to pillage and plunder.

When trades unionism stands wholly and solely for the settlement of capital and labor differences upon peaceful principles, and ostracizes those who resort to violence to achieve their ends and accomplish their purposes, the cause for their complaints will disappear; but so long as trades unionists not only tolerate but encourage violence on the part of the army of workers, and they take advantage of the opportunity to act as was done in the instances referred to they must expect force to be checked by force; and the only force that can be effective in such instances is the force of arms.

No one can complain that the militia in the disturbed districts acted other than with discretion under strong provocation to resort to sterner measures and they preserved a conciliatory, in the place of a forceful, repressive policy, which was aggravated on several occasions. Force is no remedy where reforms are needed or sought; but it is needed where moral suasion is banished to the winds, and a period of incendiarism, plunder, outrage and cruelty is established. To boycott militiamen from trades unions savors of encouraging such crimes as these, and reflects no credit upon fraternal orders.

SOME HEROIC STUFF.

There is some heroic stuff among the foreign-born population of Canada. For example: In a St. Catharines foundry recently, when a gas explosion seemed imminent, all the employees fled but three. One of the three was held down in the cupola and faced certain death.

He was an English-speaking Canadian. The other two, an Italian and a Pole, foreigners, jumped into the cupola, risking their own lives, and saved him from death. From this incident the Peterboro

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"Examiner" draws a moral of interest to all Canadians at this time. Here were two men, one of whom is often patronizingly referred to as a "dago," the other being slightly called a "Pollack," yet both heroes. Pretty good stuff for the "melting pot," that.—Brantford Expositor.

A SUGGESTION THAT FAILED.

The gentle suggestion that all union workers should go on a forty-eight-hour strike as a protest against the call of the militia to Nanaimo has not prevailed, says the Vancouver News-Advertiser of the 6th inst. It would have involved a violation of agreements made by union men within the last few days. As more responsible representatives of the working men have pointed out, it would do no good to the miners, who wish to be let alone. There is a class of agitator who would consider it an argument in favor of a strike that it would be a breach of contract, and also that it would be an injury to the men. This is the class which wishes to abolish wage-earning at once, and advocates anything which makes such employment impossible. From their point of view the labor conditions that are best for the employers are the least desirable because they make the men satisfied. The aim is to produce intolerable conditions. Therefore they welcome most a strike without a grievance, and a result that is most unhappy for the men. It is not surprising that these promoters of misery have a grievance against genuine labor organizations, which seek to promote the immediate welfare of wage-earners.

LABOR UNIONS.

We append for the information of the public generally some excerpts from a decision given in the United States Court at Indianapolis, Indiana, in a case arising out of a strike of iron moulders for "a closed shop," says the Victoria Colonist of the 18th inst. The judge defined the law to be as follows:

"An act performed to compel men, against their will, to join a union, or to become union men, is illegal.

"If strikes necessarily require as a condition of success the violation of personal liberty, then strikes stand self-condemned.

"Every man has the right to work for whom he pleases, and for any sum he thinks proper, and no person has the right to prevent him from doing so.

"The right of personal liberty to work if one wishes, without fear, is a right of which no man can with any shadow of equity, deprive another.

"A union in its collective capacity has no right to impose a course of conduct or rules adopted for its own members, nor have its members upon any other man against his wishes.

"Thus where a union attempted to compel certain non-union men to become union men, with the alternative that if they did not, they would lose their jobs or employment; and by reason of their

refusal or failure to accede to the demand, they lost their employment, were unable to obtain other employment, and thereby were damaged, it was held that the action of the union was illegal and its participating members were liable."

This decision is not based upon a statute but upon the Common Law, and while it is not binding upon Canadian courts, it is of very great interest as showing the trend of judicial opinion. Taken in connection with the decision of the Judicial Committee of the Privy Council in the Manitoba case, which we recently printed, it indicates a growing tendency to curtail the powers assumed by labor unions.

THE MILITIA.

The Times has received a considerable number of letters within the past few days dealing with the subject of "militarism," and for the most part condemning "militarism" in general and calling out of the militia for the purpose of quelling disturbances in the coal mining districts in particular, remarks the Victoria Times of the 30th ult., in an able and public-spirited editorial. Most of these correspondents seem to be strong advocates of peace in the abstract. Some of them even quote the Scriptures in support of their position. They say it is written, "Thou shalt not kill." But in their zeal to make a theoretical point, and to support a position that seems to be somewhat in advance of the times, they overlook the fact that the militia did not kill. In fact, we do not know but it might be justifiable to assume that the opportune assembling of the militia at the points where mob law temporarily prevailed prevented murder being done—because when lawless elements have been incited up to the point of assault upon the person and to the wanton destruction of property, there is immediate danger of murder following. None of the sophisms of the defenders of mob

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rule as distinguished from law and order even at the point of the bayonet can alter the opinion of reasonable and reasoning beings in respect of palpable facts and inevitable conclusions. Notwithstanding all that theorists may say in regard to the inherently peaceable intentions of the strikers in general, the facts remain that persons were assaulted, that life was endangered, that property was destroyed, that business was suspended, that mob rule prevailed. In the present stage of the world's economic condition, at all events, such conditions were intolerable, and could not be countenanced. The militia were called out, and immediately order was restored, life was safe-guarded and business began to flow in accustomed channels. There is no question as to the fact that 90 per cent. of the people in the disturbed districts welcomed the militia. And the officers and men performed their delicate duties so excellently; notwithstanding some taunts and jeers in the first instances, they displayed so much tact and fine discretion in doing what they had to do, that when the contingents no longer required left yesterday they departed with the good wishes of the residents. These facts must surely be somewhat confounding to the opponents

of "militarism." They ought to, and we believe will, tend to the popularizing of the militia in Victoria and other parts of the province.

In the meantime the altruistic advocates of peace, whether of the internal or external variety, whether national or international in scope, would do well to inculcate upon their apparent following the sublime principles they so eloquently preach.

"MAKE IT A WHITE MAN'S COUNTRY."

The Victoria Week of the 23rd ult. contained the following clever poetical satire on the way the beautiful "White Canada" theory works out in practice. We commend it heartily to our local agitators and gutter-politicians, as a token that they can't fool quite all the people:—

"Make it a white man's country!"

Is ever the hue and cry,
From the urchin who rolls in the gutter,
From the statesman who rules on high.
To make it Christian and moral,
Is ever the goal we seek;
So down with the Oriental,
Out with the stalwart Sikh.
Let in the dusky Dago,
These are the men to work.
The scum of Southern Europe,
The Bulgarian and the Turk
Any thing that is not yellow
May come to us day and night,
He may knife his chum in the alley,
But—keep the country white!

So welcome to these our brothers,

Followers, I mean,
Of Him we love to honor,
The gentle Nazarene.
Go view the smoking homesteads
About the mines today,
As the bomb falls in the nursery
Where the children romp and play.
List to the wailing women,
See babies dumb with fear,
And fathers broken and beaten
By the men we welcome here.
How do the yellow races
View the shameless sight?
What do they think we compass
By keeping the country white?

Brutes from the ranks of labor,
Who revel in blood and flame
(When the victims are defenceless),
Christian and "white" by name.
Merciless as a tiger,
A blot on the virgin soil,
Who dares to wield his pick-axe
With the honest son of toil.
In the dusk he will knife his neighbor,
To the land a blight and pest,
Who jeers at a Sikh or Hindoo
For the medal on his breast.
Who fears the Jap at his duty
Cleanly alert and bright.
So bring in a few more cargoes;
We are keeping the country white!

A FAR OFF HAPPY LAND.

Australia must be a nice place to live in. They have no Conservatives there, only Liberals and Laborites—Dundas Banner (Lib.)

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COPPER IN GREAT DEMAND.

Eastern copper market authorities have wired that there was no electrolytic copper in sight for delivery in August and September for less than 15½ cents a pound, and the upward movement has only started, says a mining writer. The outlook for the metal market improves daily. The following Boston comment upon the situation will prove interesting, for it indicates that the American consumer has been guilty again of the habit of refusing to purchase copper except upon an advanced market, kindly stepping aside while the metal is cheap for Europe to get the low-priced metal.

Seldom in the history of the copper selling industry have manufacturers shown such an extreme anxiety to secure immediate delivery copper, both foreign consumers and American manufacturers. They have been caught short of working stocks, and big copper sellers are almost hourly in receipt of telegrams or cables imploring "rush shipments." Copper agencies in this country have been compelled to cable foreign representatives to send no more "immediate shipment" instructions, as spot copper supplies have been practically exhausted.

Were it not for restrictive influence of high money rates, demand for copper for all sorts of electrical power transmission would be enormous. In spite of the money handicap, trade and tariff uncertainties, wars, insurrections, etc., the copper consuming world has been able to lick up production faster than it has come out of refineries. Given a return of normal financial and trade conditions consumption of copper promises to surpass all previous records.

There are 1,645 miles of electrified steam railroads in the United States in actual operation or under construction,

and in addition 1,465 miles are planned. Here is a big potential demand for copper awaiting release of investment funds into constructive enterprises.

THE PROSPECTORS' OPPORTUNITY.

The statement is frequently made that it is in times of money tightness the mining industry is most likely to come into its own, remarks the Hedley Gazette of the 14th inst. That at all events has frequently proven to be so, and we need not go any farther for an example than in the case of a mine in the Similkameen riding which enjoys the distinction of being the first lode gold mine in British Columbia to pay regular dividends. The mine referred to was the Cariboo in Camp McKinney. It was in 1893 when times were shockingly bad in the United States and not as good in Canada as could be desired, the owners of the Cariboo, who were Spokane men, were pretty hard up financially. Believing that the Cariboo would pull them out if they could realize on a little of the gold that they knew to be in the property, they bought a second-hand stamp mill on credit and got together a crew of miners who were told that they were to get no pay if it did not come out of the ore. The merchants furnished supplies on pretty much the same kind of layout. The ten stamps were taken in over the snow, there being no roads at that time, and without a building over them to shelter the batteries, the stamps began to drop in April 1894 on rich surface rock and a few months run put them all out of their troubles. The property turned out \$1,700,000 in bullion before it was shut down and paid about \$560,000 of it in dividends.

There is not lacking the evidence that money is available today for the devel-

opment of promising prospects if the owners will only listen to reason. Men who understand mining and have money to invest in unproved properties are prepared to take a risk; but no more risk than is necessary, and they require the moneyless owner to take a little of the risk as well. It is useless to expect that any mining investors who know what they are doing and what they can do, will pay out cash for the mere privilege of spending a lot more money on a property that may not be worth a bean. Mining investors do not do business in that way any more, and the camps that are long in opening up are the ones where the majority of promising claims are held by men who have no money to work with; no stomach to work themselves without it, and no sense to see that it will be to their own interest to give all the time required to prove up their properties when men who have the money and who know how, are willing to take a chance.

The visit here last week of men from the Canadian Mining and Exploration Co. who are already favorably disposed towards the camp, is an acquaintance which should be cultivated, and the golden way to cultivate a desirable acquaintance is through the exercise of sweet reasonableness. It is the prospectors' opportunity; what will he do with it?

A FINE EXAMPLE.

Says the Phoenix Pioneer of the 16th inst:

The British Columbia Indians, who were concerned in the arrest of Spintlum and Moses Paul, have set a notable example to the white men of this province. They have flatly refused to accept payment for the assistance they afforded the police. In other words these children of the forest have risen to unexpected heights and declined to soil their hands with blood money. They consider that in acting as they did they were only performing their duty. White men please copy.

NO RUN-AWAY MARKET WANTED.

"The excited buying," says the current issue of that authority on metals, the Boston Commercial, "which carried the price of copper up to 16 cents a week ago has subsided, and the market is a trifle easier. Lake is now 15½ and electrolytic 15½ to 15¾ per pound. Producing interests are working rather to prevent than to encourage a further advance in the price of copper at the present. They are well sold out, most of them having disposed of all the copper they will be able to deliver up to the end of next month, and therefore they would not benefit materially, for the present at least, by higher prices. It is for the best interests of the producing companies in the long run that the price of copper should remain as nearly as possible at one level from year to year. Extreme advances always have a tendency to cut off more or less consumption, and not infrequently a combination of trade depression and other factors

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result in a period of abnormally low prices immediately following.

"In 1906 some of the largest producers attempted to stop the advancing tendency of the market at 15½ cents per pound. At that price they sold copper as long as they had any to deliver; but the demand so exceeded the supply that the metal sold at 26 cents a month later. It is understood that certain producing and selling interests, wishing to avoid a run-away market at present have recently admonished their customers to avoid excitement, assuring them that all the copper there is coming from the mines will be divided between them proportionate to their requirements, and that prices will not be advanced unless they are bid up by the consumers themselves."

MR. LLOYD-GEORGE AND FOOD TAXES.

Mr. Asquith and his colleagues and supporters have lost the use of their appeal to the consumer that Tariff Reform means an odious tax on food, says the Vancouver News-Advertiser of the 22nd ult. As the News-Advertiser has often pointed out this criticism comes badly from a Government which taxes tea, sugar and other foods used by all classes and in greater proportion by the poor. Not as soon as might have been expected this false pretence has been thoroughly exposed and attacked. The chief assailants are not Conservatives, but Radical Liberals. Mr. Snowden, a Labor member, moved an amendment condemning the system of taxing

the food of the people. One sentence of Chancellor Lloyd-George's reply has been posted as a text for Tariff Reformers. The British Minister of Finance said: "If the working classes are not to contribute by means of taxes on food, I should like to know in what way they should contribute." This may be a good economic challenge, but it is at the same time an answer from official Liberalism to the declaration of official Liberalism that Tariff Reform means the taxation of food which can never be endured. Mr. Lloyd-George is raising \$50,000,000 a year by taxation of tea, coffee and sugar alone, and Tariff Reformer suggests a food tax taxation of that kind. The tax on the tea used by the working men is far more than a hundred per cent., and no Tariff Reformer suggests a good tax higher than ten per cent.

THE KICKER.

Every man has a right to take a paper, or stop it for any reason at all. But at the same time there is a certain responsibility attached to all actions, even so trivial as stopping a paper, because the editor says something one doesn't agree with. There is a complaint that editors lack fearlessness and honesty and that newspapers are too generally mere partisan organs that disregard the claims of truth and justice when political interests are at stake. There is too much truth in the charge!

If it is of Value

To the Miner, Prospector or the Mining Investor, it is to your advantage to see that it is brought to their notice.

Advertise It!

Find out for yourself the paper that is reaching this class of men; select the best medium you can get and USE IT.

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Is in touch with the Miner, Prospector and Investor of British Columbia. It goes into almost every mining camp on the Coast or in the Interior and is therefore the best medium for your advertising. USE IT.

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AIDS

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For Sale by

THE B.C. MINING EXCHANGE

P. O. Box 806.

Vancouver, B. C.

But let us ask how it is possible for a fearless, honest, outspoken journal to live if every man is to cry out "Stop my paper" whenever he reads something that does not accord with his views? The men who insist that the paper they read shall never say anything contrary to their views are the ones who are, in a measure, responsible for the craven cowardliness and the weathercock propensities of modern journalism. In a community composed entirely of these "Stop my paper" people, true independent journalism would be an impossibility. When you are convinced that a paper is dishonest and de-

ceitful, stop it. When convinced that it is unclean, stop it. When it lacks enterprise and fails to give you news, stop it. But don't stop a paper that you believe to be honest, enterprising, clean and courageous, simply because the editor has written his own sincere views instead of yours or some other persons; for if you do, you are putting a premium on insincere journalism and serving notice on an editor that the way to succeed is to write what he thinks will please his readers instead of what he thinks is honestly the truth.—Merritt Herald.

cies which require the support of such a canard. The report has been officially denied in every quarter from which the denial is worth having, and it is now perfectly clear that it is made up of "whole cloth." The leader writers of the Liberal press seem to forget that financiers lend money on business securities and not on political campaign schemes. When London opened its coffers to the Canadian Northern it did so after full investigation, and was perfectly satisfied with its security, otherwise the money would not have been forthcoming. England financed the old Grand Trunk Railway system in Canada and the United States to a far greater amount that it has financed the Canadian Northern, and for forty years saw practically no return, yet never once was it suggested that there should be any variation in the securities which had been accepted, or that the Government should step in to protect the investor. London does not do its business in that way, and apart altogether from the intrinsic merits of Canadian Northern securities, about which no competent judge has any doubt, the last thing in the world likely to happen is for London to ask Ottawa to please help it out of a bad bargain. The Liberal press is hard put to it when it resorts to such puerile tactics.

Diamond Drill Contracting Co.

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THE CANADIAN NORTHERN.

Recently the Liberal press was very busy circulating the report that leading London financiers had started a movement having for its object the purchase of the Canadian Northern Railway system by the Dominion Government, remarks the Victoria Week of the 26th inst. As Sir Richard McBride pointed out, the object of such a report could only be to discredit the Canadian Northern by suggesting that the large financial houses interested in its various securities were becoming apprehensive, and wished to protect their investments by a turn over of the property to the Government. Incidentally it is clear that if such a report should be generally accepted as correct, the effect would be to discredit the present Dominion Government and also the Government of British Columbia, whose policy has been so strongly to support the Canadian Northern. It is not necessary to use expletives in order to characterize fitly the political exigen-

EXPRESSIVE.

Says the Toronto News of a contemporary: Very often the Globe with all its pretension to size is as spiteful as an undertaker at a dynamite explosion. The smile is a new one, but it is expressive.

VICTORIA TERMINAL RAILWAY AND FERRY CO. VICTORIA AND SIDNEY RAILWAY TIME TABLE No. 14

NORTH BOUND				Distance from Victoria	EFFECTIVE 7.00 A.M. JULY 25th, 1913	SOUTH BOUND				
No. 7 First-Class Sunday Only	No. 5 First-Class Except Sunday	No. 3 First-Class Daily	No. 1 First-Class Except Sunday			No. 2 First-Class Except Sunday	No. 4 First-Class Except Sunday	No. 6 First-Class Except Sunday	No. 8 First-Class Saturday Only	No. 10 First-Class Sunday Only
A.M.	P.M.	P.M.	A.M.			A.M.	A.M.	P.M.	P.M.	P.M.
De.10.00	De. 5.00	De. 2.00	De. 9.00			Ar. 8.30	Ar.11.30	Ar. 4.30	Ar. 7.15	Ar. 6.00
" 10.05	" 5.05	" 2.05	" 9.05	.60	..... Victoria	" 8.25	" 11.25	" 4.25	" 7.10	" 5.55
" 10.20	" 5.20	" 2.20	" 9.20	5.26	..... Hillside	" 8.10	" 11.10	" 4.10	" 6.55	" 5.40
" 10.25	" 5.25	" 2.25	" 9.25	6.34	..... Royal Oak	" 8.05	" 11.05	" 4.05	" 6.50	" 5.35
" 10.35	" 5.35	" 2.35	" 9.35	8.91	..... Beaver Lake	" 7.55	" 10.55	" 3.55	" 6.40	" 5.25
" 10.40	" 5.40	" 2.40	" 9.40	10.69	..... Elk Lake	" 7.50	" 10.50	" 3.50	" 6.35	" 5.20
" 10.45	" 5.45	" 2.45	" 9.45	12.83	..... Keating	" 7.45	" 10.45	" 3.45	" 6.30	" 5.15
Ar.11.00	Ar. 6.00	Ar. 3.00	Ar.10.00	17.10	..... Saanichton	De. 7.30	De.10.30	De. 3.30	De. 6.15	De. 5.00
					..... Sidney					

SPECIAL RULES

North bound trains will have right of track over trains of same or inferior class South bound.
Trains and engines will not exceed ten miles per hour over bridges between Hillside and Beaver Lake, and will approach all spur track switches with train under complete control.

The Standard Rules of the Great Northern Railway have been adopted by these Companies, and employees will be governed thereby.
This time table is not intended for the information of the public, nor as an advertisement of the time of any train. The Companies reserve the right to vary from it at pleasure.

F. VAN SANT, Superintendent.

When Answering Advertisements Please Mention B. C. Mining Exchange.

PREMIER BORDEN REPLIES TO NELSON BOARD OF TRADE.

The Nelson Daily News of the 18th inst. says:

In a letter to the Nelson board of trade, Premier Borden states that he has placed before Hon. Louis Coderre, Minister of Mines, the suggestion that a commission should be appointed to investigate the lead and zinc industries, and that a separate portfolio of mines should be created.

The communication was in reply to a letter of the board of trade expressing appreciation of the action of the Dominion Government in granting an extension of the lead bounty, and referring to the work of R. F. Green, M. P. for Kootenay, towards this end and to the advantages of the establishment of the new mining laboratories and experimental reduction plant at Ottawa.

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THE PASSING OF THE FIT.

A rural family doctor says that, when he began to practice, a family with less than four children was exceptional, while now it is a rare thing to find more than that number. On the whole the original population is rather growing less than more, and the country is fast passing into the hands of the French. The same story is true in other parts of the land, where it is foreigners who are replacing the British breed. We are simply exhausting our energies to develop a land for other people. We hear a good deal said in these days of exigencies, about people that ought not to get married, and the necessity of providing laws that will prevent the multiplication of the unfit, but very little about the fact that the fit are passing off the face of the earth. It is not those races that marry early, and as a matter of course, which are more liable to degeneracy.—Montreal Witness.

DRY DAYS.

Emerson says, "Write it on your heart that every day is the best day in the year." We shall not do it. We will not tell a lie. There are some days when you don't get more than one invitation to take something.—New Orleans Picayune.

CECIL RHODES ON MINING.

Cecil Rhodes in a speech given shortly before his death summarized the value of the mining industry in the following words: "Mining has been the foundation of the world's wealth from the beginning of time. The governments rich in minerals have always been the richest and strongest governments on earth. Remember, that a man who produces gold, silver and copper is creating raw material for money. Every blow of his pick, every echo from his drill adds to the wealth of every man's business in the

world. The miner of precious minerals is not a business pirate. Mining is the only business on this earth that increases the wealth of the world without robbing or infringing on the rights of others."

THAWING EXPLOSIVES.

The nitroglycerine in ordinary dynamite crystallizes, or as is commonly stated, "freezes" at a temperature of 52 deg. Fah., and to procure the maximum efficiency the explosive must be properly thawed before using. The best method of thawing small quantities of dynamite is to use a water jacketed tin vessel, in which the cartridges are placed. Before the water is placed in the vessel it is warmed to a temperature not uncomfortable to the immersed hand; the temperature should never exceed 130 deg. Fah., as above that there is danger of explosion.

A NEW USE FOR COPPER.

Tests of the service rendered by steel railroad rails containing one half to one per cent. of copper have been made by the Chicago, Milwaukee & St. Paul railroad, and following the results shown by a year's service of 5,000 tons of rails, double that quantity has recently been ordered, says the Mining and Scientific Press. It is understood that if further tests prove equally favorable the company will adopt this alloy as standard in its rail specifications. Since over 3,000,000 tons of rails are made annually in the United States an important avenue of consumption of copper might result from the adoption of this style of rail alloy by even a few of the larger railroads. Whether this would be reflected directly in the copper market, or would merely open the way to the use of iron ores in the blast-furnace that contain small amounts of copper is less certain. There are many mines that could furnish copper-contaminated iron ore.

We make a Specialty of MINERS' OUTFITS

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Miners
and
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We know the needs of the miner, because we have had over 26 years of experience in outfitting them.

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HUDSON'S BAY STORES
VANCOUVER, B. C.

BRITISH COLUMBIA

THE MINERAL PROVINCE OF CANADA

Gold, Silver, Lead, Copper, Coal, Coke, Iron, Zinc, Platinum, etc.

The aggregate value of the Mineral Production of British Columbia is

\$430,137,522

As follows: Placer Gold, \$72,194,603; Lode Gold, \$70,859,022; (Total Gold, \$143,053,625); Silver, \$33,863,940; Lead, \$27,520,753; Copper, \$73,723,562; Zinc, Iron, etc., \$1,528,403; Coal and Coke, \$132,871,155; Building Stone, Brick, Cement, etc., \$17,576,084.

The substantial progress of the Mining Industry of the Province is strikingly exhibited in the following table, which shows the value of production for successive five-year periods:

For all years to 1892, inclusive.....	\$ 81,090,069
For five years, 1893-1897.....	31,420,396
For five years, 1898-1902.....	77,218,073
For five years, 1903-1907.....	109,797,744
For five years, 1908-1912.....	130,611,240

Aggregate value of Mineral Production..... **\$430,137,522**

A Great Mining Region

British Columbia is pre-eminently **A GREAT MINING REGION**. Its mines already yield virtually all the Lead mined in Canada, more than one-half the Gold, nearly three-quarters of the Copper, fully one-quarter of the Coal and about one-tenth of the Silver, and a share of some other minerals. This high rank has been reached notwithstanding that prospecting of even the most desultory character has been carried out only on a small, almost insignificant, part of the area, and this chiefly in districts lying south of the main line of the Canadian Pacific Railway.

Minerals Widely Distributed Throughout British Columbia

COAL occurs in vast quantities. The recently published estimate of a well-known Dominion geologist places the coal content of the various known coal areas of the Province at: Anthracite, 61,000,000 tons; bituminous, 39,674,000,000 tons; lignite, 490,000,000 tons; total, 40,225,000,000 tons. Coal mines are being worked in Southeast Kootenay, Similkameen, Nicola Valley, Vancouver Island, and others are being opened on Queen Charlotte Islands, Skeena River, and other widely-separated parts of the Province.

GOLD is also found, practically all over the Province. The largest known Placer Gold fields are in Cariboo and Atlin districts. An official estimate of gold-bearing gravels in Quesnel division of Cariboo district alone is 2,500,000,000 to 3,000,000,000 cubic yards, containing \$300,000,000 worth of gold. Lode Gold is now obtained chiefly from mines in Rossland, Nelson, Boundary, and Similkameen districts. The Coast district gives every promise of also yielding much lode gold when more mining shall be done in it.

SILVER in comparatively large quantity comes from Slocan, and Boundary mines. Lardeau, Rossland, Nelson and Coast district mines also produce silver. Much more is expected from mines now being developed in Portland Canal and Observatory Inlet and the Skeena and Omineca districts.

LEAD is mined in greater amount in East Kootenay than other parts, but Slocan, Ainsworth, Nelson and Lardeau mines also produce this metal. Skeena district gives promise of producing lead ere long.

COPPER mines in Boundary district are the largest producers of this metal in Canada. Rossland and Coast districts also yield copper. Kamloops and Similkameen are both known to have large deposits of copper ores awaiting utilization.

ZINC AND IRON will yet become important contributors to the mineral production of British Columbia, there being much ore containing one or other of these metals, in various parts of the Province.

OTHER MINERALS occur, though little has yet been done to utilize them. Among those found are: Cinnabar (Mercury), Pyrites, Scheelite, Tungsten, Molybdenum, Platinum, Mica, Gypsum, Magnesite, Chromite, Asbestos, Petroleum, etc.

REDUCTION WORKS include Copper and Lead Smelteries, Stamp Mills, Silver-Lead and Zinc Concentrating Mills, Electrolytic Lead Refinery, etc. The largest Copper Smeltery in the British Empire is that of the Granby Company at Grand Forks, B. C. Smelteries and Mills are equipped with modern machinery and metal-saving appliances.

CAPITAL—Capital can now find here many excellent opportunities for investment, as the value placed on mines and undeveloped properties has reached a reasonable basis. If proper business care is used, and the experiences of competent men utilized, these investments should be safe as well as profitable.

MINERAL LANDS—Mineral lands are open to location to any person over 18 years of age, who has obtained a free miner's certificate, and perfect title to lode claims can be easily secured after \$500 worth of work has been done per claim.

For information, reports, bulletins, etc., address

THE HON. THE MINISTER OF MINES, VICTORIA, B. C.

The British Columbia Mining Exchange

AND ENGINEERING NEWS

VOL. XV.

VANCOUVER, B.C., OCTOBER, 1913.

No. 10

The Granby Consolidated Mining, Smelting & Power Co., Ltd.

The Annual General Meeting of Shareholders Takes Place in New York—
Highly Satisfactory Report on Year's Operations—Company's New Holdings
at Observatory Inlet Making Excellent Progress—New Smelter Nearly Ready

The Annual General Meeting of shareholders in The Granby Consolidated Mining, Smelting, and Power Co., Ltd., was held in New York on October 7.

The report of the directors, reports of officers, statements of accounts, etc., for the company's fiscal year ended June 30, 1913, were adopted, and the following Board of Directors was elected for the ensuing fiscal year: Messrs. E. P. Earle, New York; A. C. Flumerfelt, Victoria, B.C.; Northrup Fowler, New York; Jay P. Graves, Spokane, Wash.; J. B. F. Herreschoff, New York; B. Hochschild, New York; George Martin Luther, New York; Wm. H. Nichols, New York; Wm. A. Paine, Boston, Mass.; W. H. Robinson, Granby, P.Q.; Sanford H. Steele, New York; F. M. Sylvester, Vancouver, B.C.; Edwin Thorne, New York; Geo. W. Wooster, Grand Forks, B. C.

At a subsequent meeting of directors the retiring officers were re-appointed as follows: President, Wm. H. Nichols; vice-presidents, Jay P. Graves, W. H. Robinson, and Edwin Thorne; treasurer, Geo. W. Wooster; secretary, Northrup Fowler; assistant to the president, C. O. Mailloux; assistant secretary, H. Harvey. F. M. Sylvester was appointed general manager in place of Jay P. Graves, retired.

The several reports, statements, etc., follow:

Report of President.

Every effort has been made to keep the shareholders informed, by quarterly advices, as to the operations of the company, but the extracts from detailed annual reports herewith submitted will be found to repay careful consideration. It will be noted that the ore reserves at Grand Forks have not been fully maintained, being now reduced to 5,613,000 tons, and that the recoveries are reduced to 17.68 lb. of copper per ton of ore. The profits from operating, however, amounted to \$1,214,599 for the year, as against \$600,000 for the year previous. The cost per ton of ore was the lowest in the history of the company. At Anyox, Observatory Inlet, the ore reserves

have been materially increased, the estimates now being 7,759,000 tons containing 2.2 per cent. of copper, which is regarded as ample advance provision for the 2,000-ton smelter now approaching completion. It is confidently expected that smelting will be commenced early in the New Year.

The report cannot give an adequate idea of the obstacles which were met and overcome in establishing an enterprise of this magnitude in an absolute wilderness, and the energy and intelligence displayed by our local management cannot be too highly commended.

Report of Vice-President and General Manager.

I have forwarded to the secretary a letter from Mr. F. M. Sylvester, assistant general manager, referring to the various reports for the fiscal year ending June 30, 1913, upon the company's properties, as furnished by the treasurer and by the superintendents of smelters and mines.

You now have before you all the information that will enable you to prepare the annual report to be issued to the shareholders.

I do not think it is necessary to add anything to these reports, except to comment upon the successful year under review. In the operation of the mines at Phoenix and smelter at Grand Forks, the best economies have been effected, and the largest tonnage and lowest costs have been obtained in the history of the company.

The Hidden Creek works have progressed about on schedule. We have had some problems that, of course, could not be anticipated in the commencement of such a large undertaking; but as a whole it has gone well and come up to our expectations, as far as advancement of the work is concerned.

The mines have developed beyond our expectations as to quantity of ore actually in sight at this date. I believe at this writing that the original estimate given by our mine superintendent, Mr. O. B. Smith, will be more than realized in

tonnage of ore to be extracted; and from the present plans now being carried out, our costs should be as low or lower than the costs have been at Phoenix or Grand Forks.

Mr. W. A. Williams and Mr. F. M. Sylvester both feel that the new smelting plant can be completed by January 1. This plant will be modern and up-to-date, and the very best that can be built for economical handling of the ore, considering the surroundings and its location. I have no doubt that we will find in the operation of these mines and the smelter that the very best practice of metallurgy known to date will be carried out, and that the lowest costs expected will be obtained.

Due consideration should be given to the employees in all departments for the interest they have taken in the company, having always, so far as we can observe, the best interests of the company at heart.

All of our officials have given us the very best of service this year, and in consideration of the vast amount of work that has been done and the expenditures that have been made by the company, everything has been carefully accounted for and the greatest economies exercised; and I believe we can say with great confidence that this has been the best year in the history of the Granby Co., both as to construction work and in its mining and smelting operations.

Report of Assistant General Manager.

The various reports covering the operations, construction and developments of this company during the last fiscal year, have been forwarded to you by the treasurer and our superintendents of smelters and mines. The results of these operations at Phoenix and Grand Forks show a continuation of the efforts of the men in direct charge at these places toward economical production, and it is also to be noted that the surface construction work in connection with the building of a new reduction works at Anyox, as well as the further development of the mine and the shipping facilities there, has progressed in a very satisfactory manner.

and quite up to the schedule and plans laid out for this work.

In addition to the development work which is part of the routine work at the Phoenix mine, an active programme looking to the exploration and acquisition of other properties giving promise of adding to the tonnage tributary to the Grand Forks smelter, is being carried out.

In line with the above policy, other properties are being examined and will be recommended for the consideration of the Board of Directors whenever they seem to merit further attention.

In connection with the work in progress at Anyox, a similar policy of seeking supplies of ore for the smelter there, in addition to the main supply to be had from the Hidden Creek mines, is being followed, and the work accomplished in this direction during the last year is giving promise of favorable results.

As an auxiliary to the Hidden Creek ore, a lime quarry has been purchased; it is near Maple bay, Portland canal, a towing distance of 65 miles from the wharf at Anyox. It will be ready so that shipments by barge can be made by November 1. For the transportation of this rock and all ores requiring floating carriage, two barges of about 1800 tons capacity each, have been purchased, and additional barge equipment and tow-boat will be required in the near future.

Viewing the progress of the construction work on the new plant, it appears to the writer that the men in charge are doing remarkably well and that good progress is being made, especially when due consideration is given to the excessive cost of labor and material, the rains and generally adverse conditions under which they are working, and that, except for unusual contingencies happening to delay, we should be ready to try out the plant at least by the first of the year. It is not likely that we will have completed all of the work in connection with building the plant, but we should, barring unusual delays, have all of the essential construction completed ready for operation, as at least 90 per cent. of the machinery and equipment is on the ground, and the foundations are completed, so that the installation of this machinery will be begun at once; in fact a start has already been made on one of the furnaces.

In view of the status of the work at present, we therefore feel warranted in saying that the plant will be ready to begin operations by the first of the year.

Report of the Treasurer.

Following is a summary of the year's business:

Produced—

22,688,614 lb. of copper fine, sold at average price of	\$0.16039
324,336 oz. of fine silver, sold at average price of	0.61179
47,266 oz. gold fine, sold at average price of	20.00

The total amount realized equals \$4,782,691.20

Costs—

Working expenses at mines and smelter, freight, refining, selling and general expenses	\$3,402,972.19
Foreign ore purchased	165,119.71
	<u>\$3,568,091.90</u>

Cost per ton, including all expenses\$2.65
Cost per lb. of copper after deducting value of gold and silver 10.6c

Profit and Surplus—

Net profit for year ended June 30, 1913	\$1,214,599.30
Less:	
Dividends paid during year	499,955.46
Discount, interest and expenses, issue of \$1,500,000 Series A bonds	80,665.62
Depreciation	829.05
	<u>531,450.13</u>

Net surplus for year ended June 30, 1913	683,149.17
Surplus carried over from last year	2,516,121.56

Total surplus at credit June 30, 1913	\$3,199,270.73
There has been expended on new equipment at the smelter.....\$	19,728.87
There has been sold of old equipment	19,145.00

Mine development during the year.....	11,517 lineal ft.
Diamond drill development	14,966 lineal ft.
Granby ore smelted	1,264,690 dry tons
Foreign ore smelted	15,179 dry tons

Plant was in continuous operation during year.

Assets—		Liabilities—	
Cost of lands, real estate, machinery, buildings, dwellings and equipment, less depreciation allowed	\$15,070,786.67	Capital stock—Issued shares 149,985.15 at \$100.....	\$14,998,515.00
Stocks and bonds	513,578.45	First mortgage six per cent. gold bonds issued May 1, 1913, due May 1, 1928.....	1,500,000.00
Anyox plant investment	2,038,185.70	Dividends held for liquidator	\$ 889.23
(\$1,058,724.51 of above invested this year).		Accounts payable.....	86,669.66
Fuel and store supplies	259,035.77		<u>37,558.89</u>
Cash and copper	1,853,758.03	Surplus	3,199,270.73
	<u>\$19,735,344.62</u>		<u>\$19,735,344.62</u>

Report of Assistant Superintendent of Mines.

The following report covers the mining operations at Phoenix for the year:

Shipments—

These were the largest on record, a tonnage of 1,261,088 having been shipped.

The following table shows an analysis of the ore shipments to date:

	Above No. 3 Tunnel Tons	Victoria Shaft Tons	Gold Drop Tons	Total Tons
Prior to July 1, 1912	4,731,637	2,362,303	881,254	7,975,194
Year ending June 30, 1913	545,121	505,623	210,344	1,261,088
Totals to date	5,276,758	2,867,926	1,091,598	9,236,282

Development Work—

The totals for the different places and to date are as follows:

	Sinking Ft.	Raising Ft.	Drifting Ft.	Total Ft.
Gold Drop... 10	1620	779		2,409
Ironsides ...176	4286	4646		9,108
Tl. for year 186	5906	5425		11,517
Tl. to date 2472	39044	66332		107,848

Diamond drilling for the year amounted to 14,996.5 ft., and the total to date is 76,141.5 ft.

Costs—

The average cost per ton of ore, crushed, on cars, including development, was 75.4 cents. This was a reduction from the previous year of 1.7 cents. Extra wages was paid during the period of high-priced copper.

Ore in Sight—

New ore developed during the year amounted to 441,072 tons. The present condition of the ore reserve is, therefore, as follows:

	Gold Drop Tons	Ironsides Tons	Total Tons
Ore developed	1,302,000	13,547,684	14,849,684
Mine has produced and shipped	1,091,598	8,144,684	9,236,282
Remaining ore	210,402	5,403,000	5,613,402

Grade of Ore—

Returns from the smelter show a recovery of 17.68 lb. of copper per ton of ore. Details are given below. Owing to the low-grade nature of the new ore added to the reserves, future calculations will have to be based on a recovery of 17 lb.

Table Showing Recoveries from Granby Ore.

Period	Dry tons Smelted	Metals recovered per ton Cu.Lb. Ag. oz. Au. oz.
July 1912..	107,427	16.38 .192 .034
Aug. 1912..	109,355	17.72 .199 .035
Sept. 1912..	108,484	18.85 .211 .039
Oct. 1912..	112,247	17.75 .20 .038
Nov. 1912..	100,671	18.0 .214 .034
Dec. 1912..	105,796	18.1 .20 .033
Jan. 1913..	100,881	17.5 .204 .03
Feb. 1913..	96,971	18.0 .223 .032
Mar. 1913..	107,931	18.1 .233 .031
April 1913..	104,848	17.7 .236 .033
May 1913..	106,755	16.67 .223 .032
June 1913..	103,324	16.9 .20 .03
	<u>1,264,690</u>	<u>17.68 .208 .0326</u>

Report of Superintendent of Mines.

Enclosed please find reports on your mining properties at Phoenix and at Anyox for the year ended June 30, 1913. A summary of the report follows:

Development—

	Drifting Year Ft.	Drifting Total Ft.	D.Drill Year Ft.	D.Drill Total Ft.
Phoenix	11,517	107,848	14,996	76,141
Anyox	8,857	19,106	18,343	37,518
Total	20,374	126,954	33,339	113,659

Shipments and Tonnage Development

	Shipment-Year Tons	Total Shipment Tons	Ore developed Tons	Value per ton Copper Lb.	Gold & Sil. \$
Phoenix	1,261,088	9,236,282	5,613,402	117,881,442	\$0.75
Anyox			7,759,550	340,516,150	\$0.20
Total	1,261,088	9,236,282	13,372,952	458,397,592	

Everything at Phoenix is running smoothly, and the shipments for the last year were greater than during any previous year. The cost per ton (75.4 cents) was less than that of any previous year, although extra wages were paid during the high price of copper.

At Anyox the mines are looking exceedingly well, and are prepared to supply the smelter with ore at any time.

During the year a large number of mines and prospects have been examined, both in the interior and on the coast.

A camp has been established at Swamp point, Portland canal, where we have purchased claims which contain large deposits of limestone, which may be quarried very cheaply for use at Anyox if required.

The work finished during the year in connection with the development of the company's Hidden Creek mine, comprised 8,857 lin. ft. of raising, sinking, drifting and cross-cutting, with 18,342.5 ft. of diamond drilling. This work was done on the 150, 230, 385, 530, 630 and 700-ft. levels. A tabulation is given below showing the proportion of the work done on each level:

Level	Surface	Drifting	Raising	Total
Surface	Cuts	Cross-cut'tg	Sinking	Total
Lin. ft.	Lin. ft.	Lin. ft.	Lin. ft.	Lin. ft.
150 ft.	0	436	369	796
230 ft.	0	189	236	425
385 ft.	35	2632	142	2809
530 ft.	29	2268	1125	3413
630 ft.	0	455	86	541
700 ft.	0	693	0	693
Total	235	6873	1949	8857

In addition to this, 3,090 cu. yd. of rock was removed underground in the widening of the 150-level at the ore chutes, and in the excavation of the crusher room on the 230-level.

The total development work now done on the mine is as follows:

Surface trenching	2,255
Drifting and cross-cutting	13,905
Sinking and raising	2,946
Diamond drilling	37,518.5

The above work has developed ore as follows:

Tons	7,759,550
Copper contents, 340,516,150 lb., or 2.2 per cent. per ton.	
Gold and silver contents, \$0.20 per ton.	

150 and 230-ft. Levels—

All work on these levels is at present in connection with the loading, crushing,

and storage arrangements already outlined. The 150-tunnel was driven 416 ft. and the raises driven to the crusher level (230). The raises give a storage of 2,500 tons of crushed ore ready to be loaded on the smelter trains.

On the 230-level the crusher room was excavated and three raises, which have a total capacity of 2,500 tons, driven to the surface. The 385-tunnel track has been continued 1,500 ft. from the portal, so that cars on this level can be dumped directly into any one of these raises. The work is now practically completed.

	Value per ton Copper Lb.	Gold & Sil. \$
Phoenix	117,881,442	\$0.75
Anyox	340,516,150	\$0.20
Total	458,397,592	

385-Ft. Level—

Drifts were driven along the No. 1 orebody to the north and south of the main tunnel. A raise was put up to the 20 drift of the 530-level to serve as an ore pocket for ore from the latter level. The tunnel was continued toward the No. 2 orebody and has reached a length of 1,678 ft. The tunnel is now in low-grade rock and should be expected to encounter the No. 2 main orebody in a short distance. Near its end another raise was put in to the 40 drift of the 530-level for a pocket for the ore of No. 2 orebody.

530-Ft. Level—

The ore in the No. 1 orebody north of the main tunnel was blocked out by drifts and cross-cuts. The blocking out of the ore in the No. 2 orebody was continued in 70, 80 and 90 drifts and 40A crosscut. On this level 35 raises were started, and timber for the chutes placed.

630 and 700-Ft. Levels—

Drifts were driven in the No. 2 orebody on both of these levels to the north and to the south of the main adits.

Diamond Drilling—

There were 72 holes drilled during the year. The greater part of the drilling was done with three objects in view, namely:

1—To outline the No. 1 orebody on the 385-level.

2—To outline the ore on the north end of No. 1 orebody.

3—To outline the ore on the north end of No. 2 orebody.

The above drilling was successful in all three objects, and has materially increased our ore reserve.

Estimate of Ore Reserve—

The last report (October 1, 1912), made to you estimated the ore reserve as 4,913,500 tons containing 228,105,300 lb. of copper, and 20 cents a ton in gold and silver. The development work since then has shown a much larger tonnage, so that we can make the following estimate:

Orebody	Tons	lb. Copper	Value
No. 1	3,328,400	151,580,500	2.26 per cent.
No. 2	4,431,150	188,935,650	2.13 per cent.
Totals	7,759,550	340,516,150	2.2 per cent.

The bulk of the ore estimated lies above the 385-level only 394,100 tons below this level being included. To the pre-

vious developed ore of the No. 1 orebody, 1,524,700 tons has been added; to the No. 2 orebody 1,321,350 tons; making a total additional tonnage of 2,846,050 tons since the previous report. The grade of the ore remains practically the same, 2.2 per cent. against 2.3 per cent. We are not considering any of the low-grade ore, (0.5 to 0.7 per cent.) of which there are huge quantities surrounding the higher-grade ore of the No. 2 orebody.

The determination of quantity and grade of ore has been taken from vertical sections, spaced approximately 100 ft. apart through the two orebodies. The sections, drawn to a scale of 100 ft. to the inch, are included in the latter part of this report, with plans of the different orebodies on the 385, 530, 630 and 700-ft. levels. The ore areas taken into consideration are colored in red with the following exceptions: No account has been taken of ore shown on section 0-90 No. 1 orebody, by holes No. 106 and 107 at the 200 ft. elevation; section 7-30 shown by No. 12 between 100 and 200 ft. in elevation; and on section 8-20 the three small areas shown by No. 126 below 340 ft. in elevation, and section 400, No. 2 orebody, ore shown by No. 13 hole between 300 and 400 ft. These areas have not been sufficiently developed to estimate their actual value. The method of calculation of the quantity and quality of the ore from these sections was shown in detail in a previous report (October 1, 1912).

Analyses—

The two orebodies differ in their analyses; the No. 1 orebody being higher in iron, sulphur and lime content, while No. 2 orebody is higher in silica, alumina and magnesium. The table below gives the average analyses of the two orebodies:

Orebody	Silica	Iron	Lime	Sulphur	Alumina	Magnesium
No. 1	21.4	29.2	5.0	30.0	5.6	1.3
No. 2	30.3	25.7	3.3	17.8	10.6	4.1
No. 1 & 2	26.4	27.6	4.0	24.3	8.3	2.4

The mine is now ready for production of the 2,000 tons a day needed to supply the smelter. The result of the drilling and underground development during the past year has been particularly gratifying, and the mine is in excellent condition.

Surface—

Considerable prospecting has been done by the company in the neighborhood of the mine, and 19 additional claims have been located around the Hidden Creek group.

A two story bunkhouse (30 by 120 ft.) with basement containing lockers, showers, bathtubs, etc., was completed, having accommodation for 110 men. The old bunkhouse has been altered and renovated, and will now accommodate 35 men.

The old mess has been enlarged to a seating capacity of 250 men, and a cold-storage plant added.

More cottages have been built at the mine, until now we have fourteen 4-room and four 5-room cottages.

All buildings are connected with water and sewer systems sufficient for all pre-

sent and future needs. A stable (16 by 44 ft.) was built to shelter the mine teams.

The tramway from the 530-level now connects with one from the 385 to 150-levels. Supplies brought from the beach by railway can be loaded directly on to the tramway. We are still short of bunkhouse room. When this shall be provided we will be in as good condition to house our men on the surface as we are to handle our ore underground.

Work for the year has been carried on without serious accident. We had no sickness or labor trouble, and the men seemed well pleased with the quarters and conditions generally.

Grand Forks Smelting Works—Report of Superintendent.

New Construction—

During the year we built an addition to the warehouse, giving us larger storage room, at a cost of \$2,000. We have been, and are at this time, putting in a new water service, thus providing better drinking water for the men employed at the works; when finished, this will have cost \$2,500.

The slag stacking system is now completed and is working smoothly. Its total cost was \$63,985.28. The average cost of handling slag for the year was equivalent to 5½ cents per ton of ore.

Blast Furnace Department—

The blast furnaces were run steadily for the full year. We averaged 7.94 furnaces in continuous operation for 365

days. There was smelted:

The furnace department smelted—

	Tons
Granby ore	1,264,690
Foreign ore	15,179
Converter slag and matte	48,078
Flue dust	4,422
Average per cent. of coke used per ton of ore, 13.36.	

From tonnage standpoint operations were good, tonnage for the year having been 1,279,869 tons ore as compared with 739,519 tons in 1912 and 984,346 tons in 1911.

Average smelting cost for the year was \$1.214, as against \$1.256 for 1912. All the machinery in this department is in good repair and being operated to full capacity at present time.

Converting Department—

Costs per ton ore are lower this year. Machinery is all in good repair.

This department produced 22,683,181 lb. copper in 1913, as against 13,226,369 lb. in 1912, and 17,858,860 lb. in 1911. There was handled 34,500 tons of 32.9 per cent. matte.

Taking the year as a whole from the operating end it shows very well. We handled a larger tonnage than in previous years and had higher silica slags with less copper loss. Costs were less than for any previous year since we began operations. Railways handled all material satisfactorily. There was no difficulty with labor.

Provincial Mining News

Written for the B.C. Mining Exchange
by E. JACOBS

EAST KOOTENAY.

Fernie.

The "District Ledger" has included the following items among its news from Coal Creek: Quite a bunch of coal is being shipped out of B North mine. The new jig was started on Monday. A large rock, weighing between six and seven tons, fell from the mountain in the vicinity of the snowslide of December last. Fortunately no one was injured. Preparations are being made for building a new locker-house at the mines, the present places being inadequate for the number of men employed.

A press despatch from Kalispell, Montana, follows: The local chamber of commerce returned from an excursion to Fernie, B.C. The trip was made to try out the new Kalispell-Fernie train, which was put on about the middle of October, and also to get better acquainted with the Canadian people. Delegations from Columbia Falls, Eureka and Elko joined as the train passed through those places. A smoker was tendered by the Fernie board of trade, and through the courtesy of W. R. Wilson, general manager of the Crow's Nest Pass Coal Co., and Herbert Black, superintendent of the Fernie, Morrissey & Michel railway, a visit was paid to the Coal Creek coal mines.

Union Steamship Co. of B.C. Ltd.

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Toby Creek.

J. E. Bigham returned to Kaslo early in October from Toby creek, reported the Kootenaiian, where he had been doing assessment on his claims. He went over that way in September with the party which took a look at Grey's pass, remaining behind to do the required work on his claims. The mining outlook around the Toby creek basin is improving, he states, a deal having recently been put through whereby Joe Lake, of Athlmar, bonded or sold his Black Diamond property near the head of the creek. There is talk of operations being resumed at the Paradise mine, which was one of the leading shippers in East Kootenay for a number of years. Most of the properties in that vicinity are huge low-grade propositions, requiring large capital for their development, according to Mr. Bigham, although ore from his own claims contains copper-gold ore, while silver-lead appears to be the leading mineral found in that district. The road from the Columbia river up Toby creek is in excellent condition and no great expense will be required to make it an excellent auto road if the Grey's pass route be ultimately decided upon as the route of the projected Transcontinental highway. He had a rough trip down, as the snow was falling at the summit and on this side of the big divide. He reported small game as very plentiful, but he had no time for shooting, as he was heavily loaded and in a hurry to get home.

Kimberley.

The Diamond Drill Contracting Co., of Spokane, Washington, under contract with the Consolidated Mining and Smelting Company of Canada, Ltd., is doing diamond drilling in the latter company's Sullivan group mine. Ore receipts at Trail from this mine during four weeks ended October 30, were 2976 tons, as compared with 2628 tons for a similar period to September 25, and 2607 tons to August 28. The new boarding-house at the Sullivan is nearing completion. It is substantially built and supplied with modern heating and lighting systems.

The only other metal mines producing in East Kootenay are the St. Eugene and the Monarch. The former, situated near Moyie, in Fort Steele division, shipped to Trail during four weeks ended October 23 only 122 tons; the latter is situated near Field in the Golden mining division, N. E. Kootenay, and its shipments to Trail for the same period were 158 tons.

WEST KOOTENAY

Ainsworth.

The Ainsworth camp mines that shipped ore during October were the Highland No. 1, and Silver Hoard. The Highland resumed production after a long period of inactivity; its output received at Trail was 455 tons. Receipts from No. 1 totalled 425 tons, and from the Silver Hoard 199 tons. All figures are for four weeks to October 30.

The Bluebell, across Kootenay lake from Ainsworth, shipped 1242 tons during five weeks, as compared with 630 tons for four weeks to September 25. Its chief shipping product is lead con-

centrate, containing comparatively low value in silver as well as the lead.

At the end of October Mr. W. S. Hawley returned to Spokane from the Silver Hoard. The Spokesman-Review says:

The main shaft at the Silver Hoard mine, near Ainsworth, B. C., to the 200-ft. level is progressing rapidly and will be completed not later than November 10, and the new electric hoist will be installed and ready to operate by the first of the year, according to W. S. Hawley, general manager of the Silver Hoard company, who returned Wednesday from a several days' visit at the property.

"Development of the mine is going ahead nicely, and we now have 30 men employed," said Mr. Hawley yesterday. "The orebodies on the 100-ft. level are increasing in size and value and we already have 3,000 tons of high-grade ore blocked out ready for immediate extraction. Shipments now average six cars a month, but by the first of the year the output will be increased to not less than 20 tons a day.

"Our new cookhouse, capable of accommodating 50 men, is nearing completion, and in a few days we will have the camp in good shape for the winter. We also are planning to install immediately, a two-drill combination Temple-Ingersoll electric air compressor, and when this is ready to operate we probably will increase our mining force.

"All the properties in the Ainsworth district are being worked to the limit of capacity of the resources of the different companies, and that the activity will continue indefinitely is assured."

Woodberry Creek.

Mr. D. H. Nellis, manager of the Sun mining property, was at Kaslo lately, to arrange for horses to pack ore from the mine to the lake-front for shipment. Several weeks ago the Kootenaiian printed the following news:

Shipments of ore from the Sun mine on Woodberry creek, will be commenced this fall if possible, according to D. H. Nellis, who was in Kaslo this week on business. It is expected that ore would be coming down before this, but during the high water season a log jam broke loose up Woodberry creek and swept the whole length of the stream, taking out seven or eight bridges that spanned it. Those bridges formed part of the only trail by which the Sun mine could be reached. A couple of crews of men are now repairing the damage.

Lardeau and Duncan River.

Much of the published information relative to those parts of Ainsworth and Trout Lake mining divisions appears first in the Kootenaiian, from which several of the next following paragraphs have been taken:

Claim staking in the vicinity of Poplar has been unusually active during the past season, according to Mr. John Keen, who is in close touch with developments in that camp.

Word has been received from the upper Duncan that Oscar Tapanilla has struck a good lead of silver-lead ore on his property in that part of the country

and that he is well pleased with the showing. Later news is that Oscar and Arvid Tapanilla and Charles Rosene had returned to Kaslo from doing work on the Dary group of mineral claims, on one of which a drift from the bottom of an 80-ft. deep shaft had been run 18 ft., and that it had opened a vein containing about 30 in. of silver-lead ore.

In order to justify the request made by local parties for the opening of the upper Duncan river to navigation so that ore can be brought down the stream the Secretary of the Kaslo board of trade has recently completed the preparation of extensive data dealing with the mineral possibilities of the section in the vicinity of Hall creek, a future ore-producing portion of the upper Duncan.

A test shipment of several hundred pounds of ore from the big Red Elephant group, on Hall creek, in the upper Duncan section, gave returns of \$20 per ton in gold at the Trail smelter. On account of the large body of this ore that is available, the owners have been greatly encouraged by such satisfactory returns.

Hughie McKay has returned to Kaslo, from the upper Duncan section, where he has been engaged during the fall upon the construction of a wide trail between Healy's landing and the mouth of Hall creek. Two and a half miles of trail remain to be constructed and it will then be possible to reach the upper Duncan section with much less trouble than has heretofore been the case. The link is to be finished next year and if the Federal Government shall clear the snags out of Duncan river between Howser lake and Healy's landing, ore shipments may be expected to be moving down the river by the end of next summer.

From the Rossland Miner it is learned that S. L. Williams is home from the lower Lardeau country, where he has been looking after his mining interests. Every summer, for the past seven or eight years Mr. Williams has put in the three summer months doing development work in the Great Britain group, at the head of Little Meadow creek, about eight miles west of the head of Kootenay lake. "The general conditions of that section," said Mr. Williams, "are good. There are large bodies of ore along Duncan river, and prospects are excellent for extensive development work in the near future."

The marble quarry at Marblehead is now producing a fine grade of marble. At one time lately there were seven or eight carloads ready for shipment and it was expected that when the miners got through the layer then being uncovered that they would strike a better grade than ever had been taken out of the quarry before.

A number of those interested in the new company that plans to operate a second gold dredge at Goldhill, near Poplar, have been to Goldhill to look the property over. They intend to have some development work done to see where the best results can be had and where operations can be carried on the easiest. Wherever samples have been taken so far the result has been satisfactory. D. B. Miller, president of the

new company which is to build the dredge, stated that after his return from Spokane he will start building the dredge, which will be of the suction type.

The Ajax mine at Ferguson is working 12 men at present and the property will continue operations all winter. During four weeks 68 tons of ore was received at Trail. The Silver Cup, above Ferguson, which has been under lease to Garrett and son, has shipped eight tons of high-grade ore since they took it over. J. H. Houston, who has been superintendent of the Spokane group, at Trout Lake, has closed the property for the winter.

Kaslo.

Lawrence Weston, E. Timms, Wm. Ryan and Pat Perkins are opening their claims just west of Kaslo and claim to be meeting with encouraging results. Samples of quartz taken from the lead being drifted on show iron pyrite and zinc blende.

Provided the fine weather holds out it is possible that steel may be laid right through on the standardization of the K. & S. railway before the end of the year, according to information furnished at the engineering headquarters of the Canadian Pacific railway. If the snow keeps off between Whitewater and Sproules for two or three weeks longer, the completion of the entire steel laying job will be almost a certainty. The steam shovel is a short distance above South Fork at the present time and it will be brought down to a point three miles above Kaslo in a few days. The next cutting will be at a point just above the Pilling residence and cutting out the station grounds and yards will keep the big dirt hoister busy for the rest of the winter.

The consumption of coal in Kaslo is increasing rapidly according to Alderman James Spiers, who to date this season has imported nearly ten carloads of black diamonds. The last shipment consisted of four cars, which arrived on barge 16 the latter part of last week. A few tons of the last shipment went to Ainsworth. The coal brought in this year is twice as much as was brought in last year, and three times more than was imported two years ago and four times greater than the amount which arrived the year before that. Notwithstanding this the demand for wood as a fuel shows only a slight falling off, and the burning of so much more fuel now than was the case three or four years ago indicates that the natives are getting more cold-blooded, or that the population of Kaslo is on a very satisfactory increase.

South Fork of Kaslo Creek.

Several weeks ago the Kootenaiian published the following news item: Good progress is being made with the development of the Revenue, a South Fork property, recently bonded by a Calgary syndicate, headed by R. G. Barnes, of that city, according to information brought down from the hills by Lachlan McLean, who is associated with Scott Thornburg and Thomas Melrose as one of the former owners. A fine showing of galena is being opened and as development is proceeding this ore is being

taken out and sacked for shipment to the smelter. The ore is of a good shipping grade and the Revenue has the earmarks of being a clean cut mining proposition that will ultimately assist greatly in bringing the South Fork section into the prominence it merits.

Twelve Mile and Vicinity.

E. R. Davidson, who is operating the Eureka mine, is greatly encouraged by the progress being made in driving the new tunnel at the property, which is now in nearly 100 ft. and is progressing at the rate of four or five feet per day.

A new find has been made on the property known as the Helen group, which is being opened by Wm. English and Scott Thornburg. It is situated a mile or so south of the railway, and the strike was made on the surface of nearly 18 in. of clean galena, running 80 per cent. lead and over 140 oz. of silver, the latter figure being the lowest assay for the white metal obtained from any of the pieces sampled. The ledge is said to be 8 to 15 ft. in width.

The compressor of the Utica on Paddy's mountain, in from 12-mile on the N. & S. railway, will shortly be ready for operation, which will mean a considerably lessened expenditure for drilling at that property, with a greater output and faster development. At the present time, all of the men employed in the mine are working on ore, and stopping is going on in both the east and west veins. With the connecting up of these two veins by a short crosscut, at a distance of several hundred feet from the portal of the entrance tunnel, better air will be secured throughout the mine, and at no additional expense for piping. The property never looked better, according to reports brought down recently. There was received at Trail during October 79 tons of Utica ore.

Whitewater and Vicinity.

Ore receipts at Trail for four weeks to October 23 from G. J. R. Retallack & Co's Whitewater mines, totalled only 85 tons, which was less than half that of the previous similar period. Development work is still being done.

Walter James, owner of a property adjoining the Black Prince, near Sproules, reports that a representative of the Finch syndicate of Spokane, recently examined the Black Prince and made a favorable report on the property.

Ore is being hauled from the United States mine over the new trail from the old Jackson mill to the property, according to John Carscadden, road foreman. The U. S. mine is being operated by W. B. Smith of Kaslo. An average of seven tons per day is being taken out from the mine.

W. B. Smith has taken a lease and bond on the Mountain Goat and Lucky Boy claims in the Jackson basin, and is doing some development. It is stated that an encouraging showing of ore has been uncovered on the Lucky Boy. These properties adjoin the U. S., a zinc-bearing property. Mr. Smith bonded last year.

Bear Lake.

Two cars of ore were shipped from the Lucky Jim mine during the latter part of October.

With the object of developing the Panama mine to a depth of 200 ft. as a preliminary step toward driving a long tunnel from the other side of the hill, a shaft will be sunk about 100 ft. from the drift during the coming winter, stated Mr. Henry Giegerich of Kaslo, who is heavily interested in the property. He told the Daily News further, that the shaft is being sunk on the ore, which is giving such excellent value that sufficient will be taken out during development to pay expenses. Supplies for three men during the winter and for four or five in the spring, have been sent to the property.

A. W. Allen, acting managing director of the Lucky Jim Zinc Mines, Ltd., returned to the coast after having been in Kaslo only a couple of days, having just come in from a business visit to Winnipeg, said the Kootenaiian on 9th inst. Mr. Allen stated that it may be some five or six weeks yet before operations will be resumed on the Lucky Jim, for while the new United States tariff has made the market for local zinc producers more profitable, a number of other details have to be attended to before the mine can be started going again. Mr. Allen expects to return to Kaslo in about a month.

Provincial newspapers have added the following: The Lucky Jim Zinc Mines, Ltd., has called a shareholders meeting, to be held in Victoria on Nov. 13, for the purpose of reorganizing and refinancing the company. The capital of the company is \$2,500,000. The report, signed by Hugh Armstrong, president, and G. R. Coldwell, secretary, proposes two plans for the owners to consider. One is to re-incorporate under the provincial laws and levy an assessment of five cents a share, to be called at the rate of one cent a month. The other is to issue bonds. Pressing liabilities of the company are now placed at \$82,250. G. Weaver Loper, who organized the corporation originally, is also said to be a creditor to the extent of \$73,000, but this amount, the officers say, does not become due until the mine is paying 1 per cent. a month to the shareholders. The mine cannot be operated profitably without a concentrator, they state, which will cost \$150,000. The question of raising this amount additional will be considered at the meeting.

On October 30, the Toronto Globe printed a despatch from Winnipeg, Manitoba, dated October 29, as under:

"The entire reorganization of the finances of the Lucky Jim Zinc Mines, Ltd., was under discussion at a meeting of shareholders last night. The meeting was held at the instance of the Winnipeg directors of the company. The request was made that the directors should present the financial position of the property. Hon. Hugh Armstrong, the president, stated that all the known high-grade ore had been exhausted and nothing remained but to exploit the lower grade ore. A second mortgage had been taken out on account of advances made, and the total liability of the company is now \$81,000. Foreclosure proceedings have been taken by the first mortgage holders and \$25,000 is also needed to finance new work. The directors have asked for proxies from shareholders authorizing the reorganizing and an assess-

ment of five cents a share on stock, the money to be used for paying off liabilities and mortgages, and for the development of the mine."

McGuigan Basin.

The Spokesman-Review lately published the following information concerning the Rambler-Cariboo Mines, Ltd.:

Reports received on October 20 by Dr. B. W. McPhee, one of the Rambler-Cariboo mining directors, from John Rinta, superintendent of the Rambler-Cariboo mine, state that the property is in better condition than for a number of months, and it is believed a capacity output will be maintained from now on. A 65 ft. stope recently opened in the 1200 ft. level, shows from nine inches to three feet of clean shipping ore, and there is enough mill feed already blocked out in the different workings to keep the mill operating to the limit for many months, according to the report.

"We are installing a pebble mill for assisting in the extraction of the zinc and expect to save all of that metal," said Dr. McPhee yesterday. "We consigned nine cars of zinc concentrates to the smelter at Bartlesville, Okla., last week, and will continue shipping steadily.

"A new cable for the aerial tramway from the mine to the mill and shipping bins is being placed and will be ready for service in a short time. This will increase the capacity of the carrier to 17 tons an hour, almost double what it is now. There are 65 men on the payroll, and the force will be increased soon. The mill is working nicely and conditions in the mine are improving steadily. In short we are satisfied with the manner in which things are going at the Rambler, and expect to have the property in a few months equalling its previous production record." Ore received at Trail in October from this mine totalled 316 tons.

Sandon and Cody.

On Oct. 15 the Nelson Daily News published news from Sandon, as under:

Good news comes from the Slocan Star, where 2 ft. of clean ore has been struck in No. 8 level. The company shipped a car out last week.

The Surprise mine is loading another car. Owing to its aerial tramway having to be overhauled, shipments have been delayed. Mr. Kelsall of the Van-Roi mine was here to shorten the cable.

Towgood Bros. are packing up supplies for the winter to different properties.

Ten inches of snow fell in town on Oct. 10, the earliest known to old timers.

The Reco mine has been leased to Charles Isenor, Erickson of Silverton, and others. Watkins Bros., who have a lease on the Reco dumps, are making a small shipment this week.

The Mountain Con mine is looking well. A trial shipment of one ton and a half netted close to \$500.

A. L. McCulloch of Nelson was at the McAllister last week surveying claims. These claims will be crown-granted. It is not certain if the mine will be worked this winter.

McGillveray & Holmquist, who have a lease on the Ivanhoe, are taking out considerable ore.

Mr. Copeland is getting out ore at the Colonial. He will probably work until the snowslide season.

Good progress is being made at the Payne mine.

On Oct. 28 the Daily News printed additional news, as follows:

The Slocan Star is still getting lots of good ore. The company expects to ship two cars this week.

The Surprise mine is shipping another car of high-grade ore today. Road Foreman E. A. Cameron is repairing the wagon road, which is in bad shape for heavy loads. Alex Smith, manager of the mine, was in town last week.

The lessees of the Ivanhoe have taken out about 20 tons already and expect to ship as soon as there is snow for raw-hiding.

The lessees of the Reco mine are hauling up rails and air pipes.

The pack trains were busy last week packing up five tons of supplies to the Panama mine. About four men will be there all winter, with J. P. Miller, one of the owners, in charge.

Two cars of Giant powder came in last week; it was distributed between the Payne, Noble, Slocan Star, Whitewater mines, and the company's magazine.

The Lucky Jim is shipping two cars of zinc ore this week.

What is described by Bruce White, the well-known mining man, as the richest carload of ore ever shipped out from the Slocan district is being taken out from the Mountain Con mine. Ore is being sacked at that property which will run 2,000 oz. in silver to the ton, according to Mr. White. Bennett, McClurg & Yorky are operating the property.

The Kootenayan says: The Noble Five, one of the leading shippers and dividend payers of the early days, will commence deep development next month with the driving of a 2,000-ft. tunnel. When operations at the Noble Five were suspended several years ago, it was rumored around Sandon that the property could be expected to remain closed until such time as the Kaslo & Slocan became the property of the Canadian Pacific Railway Co. The Noble Five is owned by the Dunsmuir.

The Slocan Record, New Denver, has included the following among its district news:

T. L. McAllister, manager of the Noble Five mine at Cody, states that the owners will spend much money in development of the Noble Five.

The lessees of the Ivanhoe will commence shipments as soon as the ore can be rawhided to the railway at Sandon. Already between twenty and thirty tons have been mined.

The ore body uncovered lately in the No. 8 level of the Slocan Star is the richest yet discovered in the mine. The paystreak is between two and three feet in width. The mine is shipping three 30-ton cars of ore a month to the Trail smelter.

The ore runs from 75 to 85 per cent. lead and from 120 to 150 oz. silver a ton.

The Mountain Con has closed down for the winter. Ore has been recently shipped from the property running as high as \$1,000 to the ton.

At the Surprise, from 100 to 120 tons of high-grade ore is being mined monthly. For the past two weeks a force of men have been repairing the tramway. At the mine there is ore in all the drifts from the raise, and new bodies of ore are being uncovered as development progresses.

Three Forks.

R. McPherson has been exhibiting some rich-looking samples of ore from the Milton claim, on the north fork of Carpenter creek. It is intended to ship some ore from this property next season.

The Monitor and Ajax Fraction, a Three Forks property that has lain idle for a number of years, and which was one of the earliest ore shippers in the Slocan, is being offered for sale. The property includes a concentrator at Roseberry.

New Denver.

It is stated that seven men will be employed doing development work on the Idaho and Alamo properties during the winter.

Good progress is being made in driving a crosscut adit on the Apex claim. It is calculated that more than 400 ft. of driving will be required to reach the vein, and of this 100 ft. has been done. The ore will be opened at a depth of about 275 ft.

The Slocan Record states that Mr. W. R. Will has gone to Ontario to spend the winter. He has secured a lease for three years of the interest of his partners in the Capella, Goat mountain, and in the spring will put a force of men to work on the property. Some of the richest ore mined in the district was taken out of the Capella years ago.

Buildings have been erected across Slocan lake from New Denver for the manufacturers of "Steelite" explosive, and the requisite plant has been purchased. Demonstrations of the suitability of Steelite powder for mining and other purposes have been made in various places in Kootenay and Boundary districts.

Silverton.

Telephone communication has been extended to the Lucky Thought, a property situated on the opposite side of Four-Mile creek, to the Hewitt concentrating mill, that is being developed by the Consolidated Mining and Smelting Co. under option of purchase.

Information concerning the Standard Silver-Lead Mining Co., published in Spokane in October, was as follows:

"Checks are being sent out to stockholders in the Standard Silver-Lead Mining Co., operating the Standard mine in British Columbia, in payment of the regular monthly dividend of \$50,000, or 2½ cents a share on the 2,000,000 issued capitalization. This makes the disbursement for the current year \$500,000, and the

total amount paid to date \$925,000. Recent reports issued by the Standard Co. indicate that the monthly rate of earnings is being maintained, and that the physical condition of the property is gradually improving under continued development." A new ore shoot was found recently on No. 6 level of the mine. Work so far has opened ore ranging from 4 to 6 ft. in width. Ore and concentrate received at Trail from the Standard Co. during five weeks ended October 30, totalled 1,649 tons.

The report of the Van-Roi Mining Co., Ltd., for September from its Van-Roi mine in Silverton camp, has been received from the company's head office in London. Development work was done, with a small force of men employed, to a total of 98 ft., in drifts on level 9 and in raises from that level. The best showing of ore was in a raise in the main vein where for 33 ft. the ore averaged 16.6 oz. of silver a ton, 3.4 per cent. lead, and 8.7 per cent. zinc across an average width of 60 in. in the western half. The mill was run for 96 hours on accumulations of material produced by recent developments. The total quantity crushed was 587 tons, which yielded 10 tons of lead concentrate assaying 100.2 oz. silver a ton, 53.2 per cent. lead, and 11.7 per cent zinc and 20 tons of zinc concentrate assaying 27.2 oz. silver a ton, 3.1 per cent. lead and 37.8 per cent. zinc.

Slocan City.

The Eastmont, on Ten-Mile creek, shipped 50 tons of ore to Trail during October.

The Neepawa is being worked under lease by G. B. Webster, of New Denver, who has had experience in operating other mining properties under lease. He is shipping two cars of ore a month to the Granby smelter at Grand Forks and expects to continue shipments during the winter. The ore is slightly over 100 oz. in silver to the ton.

The Ottawa will ship a car of ore shortly. This property is now owned and operated by the Consolidated Mining and Smelting Co. M. Cameron is doing the hauling from the mine to the ore bins erected on a spur just outside the town, where there are chutes to run the ore into the cars.

On 9th inst. The Daily News said: "From the Black Prince mine, near Slocan City, J. C. Moen, who was in Nelson yesterday, has shipped to the smelter a carload of high-grade ore, which is expected to give exceptionally good returns. He was on his way to the Slocan from Trail, where he had supervised the sampling and weighing of the ore. Eager for the coming of the snow in order that he may commence rawhiding, which means cutting the cost of transporting the ore from the mine to the railway in half, Mr. Moen is only shipping enough ore at present to meet operating expenses. For two miles it has to be packed on cayuses, and Mr. Moen finds that he cannot in this way deliver it at Slocan City for less than \$9 per ton.

Nelson and Vicinity.

The British Columbia Copper Co. has made a third payment upon the Eureka group, near Nelson.

The Queen Victoria mine at Beasley shipped 960 tons of ore to Greenwood smelter during a recent week. The output would have been greater only the aerial tramway went out of commission for one day.

Mr. Ed. Dedolph, of the Canada Department of Mines, states that things are nearly in shape at the experimental reduction plant at Fairview for the commencement of further tests of the proposed methods for smelting mixed zinc-silver-lead ores.

Dr. Alfred W. G. Wilson, of the Mines Branch, Canada Department of Mines, was in Nelson early in October to make inquiries in connection with the application that has been made for the appointment of a commission to investigate the requirements of the lead and zinc mining industries of the province.

On October 4, the Daily News said: "Mineral specimens which are to be shown by the Nelson Board of Trade publicity bureau at the Winnipeg land and apple show this month will be attractively displayed on black mounts. To each mount will be attached a printed card headed with the words "Kootenay-Boundary," and giving the name of the mine, the class of ore and the fact that the exhibit is being made by the Nelson Board of Trade. Three complete sets of ore samples, each of about 60 different specimens, are being prepared, and will be preserved as permanent exhibits for display for publicity purposes."

On October 30, the Daily News stated that staking of claims upon which metals of the platinum group are believed to exist continues to be carried on as indicated by the new locations recorded at the government office. Many of the claims located during the past week are in the Rover creek and other districts in which platinum discoveries have been reported. Earlier in the month the same newspaper gave this information: "Samples of rock in which platinum is stated to exist will be taken by Dr. Alfred W. G. Wilson of the Department of Mines, Ottawa, who is in British Columbia for the purpose of consulting with representatives of public bodies which have advocated the appointment of a royal commission to investigate the needs of the lead and zinc industries. Dr. Wilson, will visit the Granite-Poorman mine, Rover creek, and other places at which platinum is stated to exist and will take a number of samples of rock. Although Dr. Wilson will not be in a position to make a commercial sampling of the platinum rock, it is thought by those interested in the matter that tests of the rock which is to be made by the department will be an important step toward throwing light on the question."

Good milling ore has been struck in the third level of the La France mine on La France creek, where a tunnel, over 1,000 ft. in length, has given a vertical depth on the ore of 600 ft., stated Thos. Wall, manager of the property, to the Daily News. Seven feet of mineralized rock was encountered before the drills ran into 5 ft. of milling ore. No. 1 tunnel on the property is

150 ft. in length and with a winze 75 ft. deep gives a depth of 175 ft. Five feet of ore is opened up at this point. In some places the ore is 12 ft. in width in the No. 2 tunnel, which is 400 ft. in length and gives a depth of 250 ft. Ore is in the face of the 1,000-ft. tunnel and in a drift from it.

Ymir.

A new strike on the Yankee Girl was of two feet of good shipping ore which was found entirely unexpectedly. What it will assay has as yet not been determined, but it is fine looking ore.

J. J. Hennessy, who is working the Jennie Belle on a bond, expects to strike the main lead soon. He is working a force of 10 men and finds the rock very hard.

The ledge for which the Dundee has been working for the last two years was encountered last week. It is about 12 ft. wide and a portion of it is fine milling ore. It varies in values across the face, but will average well as a whole. The value is principally in gold. A. E. Rand, one of the owners, was here lately; he is now on his way to England in connection with his mining interests.

Salmo.

Thirteen citizens of Salmo were indicted by the grand jury at the recent assizes at Nelson on a charge of intimidating by violence, Clement S. McCormick, a Miners' Union picket.

During July, the accused were brought before two justices of the peace, D. St. Denis and W. E. Wasson on the charge of intimidation by threatening violence. The prosecution failed to secure a conviction.

When new informations charging the 13 men with intimidation by violence were laid, counsel for the defence, made an application for a writ of prohibition to prevent the men being placed on trial again. The application failed and the accused were committed for trial at the assizes at a preliminary hearing at which A. E. Watts and A. Carney presided.

However, the prosecution failed, for at the assizes the accused were acquitted. The case arose out of the persistence of McCormick in meeting trains at Salmo and advising miners not to go to work at the Queen mine, Sheep creek, the secretary of the Ymir Miners' Union having declared a strike against that mine. The so-called strike is still advertised, notwithstanding that men working at the mine declare themselves good union men. Meanwhile the Queen mine and 20-stamp mill are being operated with a full force of men.

Work is being continued at the Emerald lead mine, situated a few miles from Salmo and operated by the Iron Mountain, Ltd. Ore is being shipped to Trail, though in smaller quantity than last year.

Both the Queen and Motherlode stamp mills are being run steadily. As only part of the gold is saved on the amalgamating tables in the former, the remainder has to be caught on the concentrating tables, except what is lost in

the tailing. During five weeks to Oct. 30, 107 tons of concentrate from the Queen was received at Trail. The Motherlode recovers much of its gold by cyaniding.

In Erie camp, both the Big Bump and Second Relief were recent small shippers to Trail. The latter operates a stamp mill.

Trail.

Ore receipts at the Consolidated Mining and Smelting Co.'s smelting works were greater during the week ended October 23 than for any previous week, so far as figures at hand show. The total for the week was 9,460 tons, of which 7,935 tons was from the company's own mines. Particulars of receipts during five weeks ended October 30, follow:

East Kootenay—	Tons	Tons
Monarch	158	
St. Eugene	122	
Sullivan	3,491	
		3,771
Alnsworth—		
Bluebell	1,242	
Highland	455	
No. 1	452	
Retallack & Co.	85	
Silver Hoard	199	
Utica	79	
		2,512
Slocan—		
Black Prince	41	
Eastmont	50	
Idaho-Alamo	45	
Ottawa	34	
Rambler-Cariboo	349	
Richmond-Eureka	101	
Ruth	72	
Slocan Star	93	
Standard	1,649	
Surprise	56	
Sundry small lots	18	
		2,508
Nelson—		
Big Bump	26	
Emerald	114	
Molly Gibson	364	
Queen	107	
Second Relief	38	
Silver King	1,260	
Stewart	5	
Yankee Girl	325	
		2,239
Rossland—		
Centre Star group	15,683	
Josie (Le Roi No. 2, Ltd)	2,002	
Le Roi	9,167	
		26,852
Lardeau—		
Ajax		68
Boundary —		
Rob Roy and Belle		16
Kamloops—		
Iron Mask		277
State of Washington, U. S. A.—		
Ben Hur (Republic)	1,237	
Bonanza (Bossburg) ...	188	
Hope (Republic)	50	
Paragon (Northport) ...	7	
United Copper (Chewelah)	211	
		1,693
Total		39,936

Rossland

During the five weeks to October 30, inclusive, shipments of ore from Ross-

land mines to Trail totalled 26,852, as compared with 20,429 tons for four weeks to September 23. This month's shipments were: from Centre Star group, 15,683 tons; Le Roi, 9,167 tons; Josie (Le Roi No. 2, Ltd.), 2,002 tons. Production figures do not include some low-grade ore put through the Le Roi No. 2 Co.'s concentrating mill—probably 300 tons or more a week—but the quantity of the concentrate from it is included in the total shown as shipped.

The report of the Le Roi No. 2, Ltd., for September from its Josie mine, in this camp, has been received from the company's head office in London. Ore shipments to Trail totalled 1,729 tons, this including 85 tons of concentrate. Receipts from the smelter were \$33,404. Estimated costs for corresponding period were: for development, \$8,000; ore production, \$7,000; milling, \$1,100; total \$16,000. Development work done totalled 230 ft.; this was on the 600, 700 and 900 ft. levels and the shaft tunnel in what is known as the Josie drift. Of 56 ft. advanced in this last mentioned working, for 40 ft. the average value of the ore across an average width of 13 in. was: gold 12 dwt. a ton and copper 5 per cent. On the 600 ft. level in the Hamilton vein west, 20 ft. advanced was in ore of an average width of 25 in. and containing gold 9 dwt. a ton, and copper 0.9 per cent.

BOUNDARY.

Grand Forks.

A despatch dated New York, Oct. 9, published by the Toronto "Globe," follows: "It is understood that the Granby Consolidated Mining, Smelting and Power Co., Ltd., has taken options on several copper properties in British Columbia, but the examination of them has not progressed far enough to warrant the management in making any statement at present. The work at the Midas mine at Valdez, Alaska, is progressing rapidly, the trains and other equipment being installed and production will in all probability begin next July or August. It is understood that the acquisition of this property was made upon terms extremely favorable to the Granby."

On Oct. 18 "The Gazette" said: "R. J. Heilman, representing the Tregillus Clay Products Co. of Calgary, Alberta, is in Grand Forks for the purpose of exploring the district for fire-clay, with object of starting a plant here if the raw material can be obtained. He is being piloted through the district by Frank Waldrip of the Grand Forks Development Co. The occurrence of fire-clay has been demonstrated in the valley in the past, and it is quite expected that a deposit sufficiently large to maintain an industry can be located."

The splendid display of mineral exhibits at the Grand Forks fair, observed "The Gazette," was an added attraction over former years, the display by the Granby Con. Co. being especially good and including blister copper in various moulds, copper matte, slag and ore from the company's mines at Phoenix. There was also a good display from mines on the North Fork of Kettle river. A striking exhibit of a piece of marble, highly polished, from the

quarries east of Grand Forks, was made by G. M. Fripp.

Exact figures showing the aggregate quantity of ore smelted this year at the Granby Consolidated Co.'s smelting works at Grand Forks have not been obtained, but it is known that it is approximately 1,020,000 tons for the ten expired months of the year. Of this total, probably about 12,000 tons was custom ores, which would leave the quantity of ore from the company's mines at Phoenix rather more than 1,000,000 tons. The quantity of blister copper shipped to the refinery was about 18,000,000 lb. It seems that the quantity of ore smelted and that of blister copper shipped during the calendar year 1913, will be about the same as for the fiscal year to June 30 last.

North Fork of Kettle River.

The Grand Forks "Gazette" has during recent weeks given interesting information relative to a revival of interest in mining in the country situated 45 to 50 miles north of Grand Forks. The following is one of its accounts:

"That the North Fork mining district, and Gloucester camp in particular, is on the eve of writing an important chapter of mining history is the opinion of those well-informed in mining circles. It will not be a surprise if Gloucester develops into one of the richest camps in British Columbia.

"A dozen years ago a number of mining properties on the North Fork were opened to a considerable extent and some bore all the earmarks of becoming producers, but were never developed to the extent of warranting the Kettle Valley railway to extend its line beyond Lynch creek, the present terminus. Through the difficulty in getting the ore out for treatment the development of properties gradually ceased. Big mining companies at different times sent experts into the district to examine various mining claims, but, apparently, with unsatisfactory results.

"But throughout the long lull that followed, pioneer prospectors never wavered in their faith as to the future of mining properties on the North Fork, and some of them resumed work on their claims this year. Among them was Louis Johnson and partners, who have been developing the Union group of claims, which were referred to at length in a recent issue of 'The Gazette' as having some splendid ore and from which the shipment of a carload of ore had been made. Thirty tons was hauled by wagon to Lynch creek, 28 miles, and shipped by car to the Granby smelter via the Kettle Valley railway. The transportation and smelting charges amounted to \$22.50 a ton. Although the owners have secured the returns of this ore, the figures have not been made public. Aside from the statement that, notwithstanding the high cost of transportation, the returns leave a substantial margin, Mr. Johnson has nothing to say. It is rather significant, however, that the number of teams for hauling the ore has been doubled this week. Mr. Johnson in-

tends to continue the shipments and when snow comes will ship a carload a week."

Later news was: "The third car of ore from the Union mine, in Glouster camp, has reached the Granby smelter. Messrs. Peterson & Hansen, who had the contract for hauling 100 tons to the rail head for shipment, have secured the contract for 500 tons more, and are preparing to place four 4-horse teams on the work with the intention of shipping a carload a week. A. W. Johnson is erecting special stabling accommodation for the horses at Lynch creek. A carload of lumber has been shipped to Lynch creek for the Union mine and will be used in the construction of bunk and cook houses. Louis Johnson, manager of the Union property, states that it is his intention to increase the force at the mine as soon as suitable accommodation for the men can be provided."

Still later items that have been printed follow:

"Louis Johnson, manager and part owner in the Union group, was in Grand Forks on Oct. 28, purchasing supplies in order to be in readiness to carry on the work of shipping ore from his mine during the coming winter. Lumber is being hauled in from the end of the rail as fast as possible to build the necessary buildings for the comfort of the men engaged in the work. Ten men are steadily employed, and it is the object of the management to ship at least a carload of ore once a week to the Granby smelter. If the roads were in good shape, it is stated, the mine could ship a carload every day. The value of the product of this mine has never been made public, but it is known that it is paying, and has paid from the grass roots. While no authentic information can be gained relative to the value of the ore, some, who claim they know, estimate it as netting about \$85 per ton."

"The fourth car of ore from the Union mine reached the Granby smelter this week. Louis Johnson, the principal owner of the mine, stated that the second and third cars of ore maintained similar good value in returns to that obtained from the first car. He stated, further, that while it is the intention to continue shipments of about a carload a week, the contract for the hauling of the ore to rail head has not yet been let."

Phoenix.

Published figures show the Granby Consolidated Co.'s mines to have produced 89,527 tons of ore during October to 26th inst. Adding further production at the rate of 3,200 tons a day for the five remaining days of the month, a total of 105,500 tons would appear to have been the approximate output of the company's mines for the full month.

The "Pioneer" says: "John Anderson has been awarded the contract for getting out 100,000 pieces of stull and lagging timber for the Granby Co. The timber will be cut off the Gilt Edge claim, owned by the company, and which lies to the west of their other property

here. This claim consists of 14 acres, and is heavily timbered."

F. S. Norcross, general superintendent of the British Columbia Copper Co.'s mines, and John Piethall were in Phoenix on Oct. 16, having motored over from the Lone Star mine on business, states the "Pioneer." Considerable machinery is being installed at the Lone Star, including a compressor plant, and Mr. Norcross says it is the intention to have the property thoroughly explored by means of drifts and shafts. The Lone Star is in the State of Washington, being across the boundary line from the City of Paris, the No. 7 and other mines in that region. A 5.1-2 mile aerial tramway connects the Lone Star with bins at Boundary Falls, over which the ore is transported en route to the Greenwood smelter. A considerable tonnage has already been shipped periodically during the past seven years.

Greenwood.

According to "The Ledge," diamond drilling will be commenced on the Big Copper in a few months.

From the Hedley Gazette it is learned that the Jewel mine in the Boundary is also a good producer with no copper output and pays the wage scale received by the miners in the copper camps. Both the Nickel Plate, in the Hedley camp, and the Jewel, in the Greenwood, were paying the advanced scale until the price of copper took the slump last spring, when they reduced to be in line with the producers in the copper camps.

The exhibit of minerals at the Greenwood fair, under the care of Ola Lofstad, stated the Ledge, was the largest and most varied collection ever seen in the Boundary district. Fine collections of ores were shown from the Mother Lode, Argo, Rob Roy, Sally, 49th Parallel, Crescent Fraction, Prince Henry, Strathmore, Jewel, Skylark, Elkhorn, Providence, Crescent, Granby, Rawhide, Big Copper, Golden Crown, King Solomon, Starve-out, Empress, Mayflower, Dynamo, Johansburg, No. 7, Athelstan, Sudbury, Jim Fraction, Hartford, Bay, Togo, Charmer, Last Chance, Lone Star, and Bounty Fraction. Martin Anderson showed a fine collection of old and rare coins, while Princeton cement was much in evidence. The British Columbia Copper Co. showed specimens of blast-furnace slag, converter slag, white metal, blast-furnace matte and blister copper.

The Jewel mine, near Long Lake, a free gold property with 15-stamp mill has at last been placed on a practical business-like basis, says the Phoenix Pioneer. Below ground the progress of mining, together with development, is affording the company much satisfaction, while the mill, which has been the property's principal hoodoo, is now running like the proverbial oiled machinery, and treating upward of 50 tons of ore daily. No concentrate is now shipped, as heretofore, all of it being handled by the tube mill. The value stated to have been lost since the last opening of the mine was 60 cents per ton, but it has now been reduced to 30 cents.

The working force below ground is at present much under that which could be profitably employed, but this condition of affairs is shortly to be remedied when the new boarding house, now under construction, shall be completed, thus enabling the company to accommodate an increased number of men. At present 35 men are employed. In addition to the boarding house, other buildings are in course of erection.

Charles A. Banks, who is mainly responsible for the present satisfactory state of the property, expects to leave at an early date for the East, where he has received an appointment to superintend the erection and equipment of a large modern stamp mill.

On Oct. 25, the "Spokesman-Review," Spokane, Washington, published the following:

"Exploration work during the last 16 months by the British Columbia Copper Co., operating properties in British Columbia and Ferry county, Washington, has resulted in blocking out 4,000,000 tons of 2 per cent. copper ore, with another 4,000,000 tons in sight and still another 4,000,000 tons regarded as possible, according to a report issued on October 7, which reached Spokane yesterday.

"During the fiscal year ended December 31, 1912, the company treated 740,589 tons of ore, which produced 11,146,811 lb. of fine copper, or an average of 15.1-2 lb. to the ton. Taking this as a basis of estimate the 4,000,000 tons of ore now blocked out will yield 60,200,000 lb. of fine copper, which at 16 cents a pound, allowing 10 cents a pound for mining, treating and marketing, represents a net profit of \$3,612,000.

"The company owns and operates its own smelter, of 2,500 tons daily capacity, at Greenwood, British Columbia, where it also has a 600-ton sampling works. Power is provided by a hydro-electric plant at Bonnington Falls, British Columbia, and an auxiliary steam plant, ready for immediate service in the event of the electric system becoming interrupted, is maintained at Greenwood, and since these plants have been installed not an hour's delay has been experienced because of lack of power.

"In 1912 the company's gross income was \$2,491,277, of which \$425,985 was net profits. After expending \$229,000 in acquiring and developing new properties, purchasing (at a cost of \$122,249) \$237,675 of the bonds of the New Dominion Copper Co., and disbursing \$177,513 in dividends, there was left a balance of Profit and Loss account of \$965,737. Production of copper to date this year has been slightly less than in 1912, but the yield of gold and silver has been approximately the same and it is believed the net earnings will be about as much.

"British Columbia Copper Co. paid its initial dividend in 1907 and suspended further payments until 1911 when \$147,930 was disbursed. Other payments were made in 1912 and the last on January 15, 1913, making the total payments to date \$704,155, on an outstanding capitalization of 591,709 non-assessable shares."

Beaverdell.

The Greenwood "Ledge" says: Under the management of Alex. Robinson the Sally mine near Beaverdell has nine men at work. The force will be increased in a short time. A carload of second-grade ore has been shipped from the Sally and Bell to the Trail smelter. There are a score of properties around Beaverdell and Carmi that would pay \$1,000 to \$2,000 a month if the owners had money and energy to make them producers.

OKANAGAN.

Vernon.

Work has been suspended for the winter on the placer claims on Siwash creek, near the north arm of Okanagan lake, where Martin O'Brien, Charles Christian and J. MacLennan are installing a hydraulic system. One month of work in the spring will complete the two-mile flume, which will give a 200-ft. head of water. The claims lie just up the creek from the placer ground belonging to Fred Mundt and two miles from the lake. Prospecting during three months this year has given encouraging showings of coarse gold.

Osoyoos.

The Lakeview-Dividend Mining Co. has shipped ore from its property on Kruger mountain, near the International Boundary line, to the Granby smelter at Grand Forks. A five-ton auto truck was used to haul the ore from the mine to the railway at Orrville, Washington.

SIMILKAMEEN.

Camp Hedley.

On Oct. 16 "The Gazette" published some information relative to a dike lately encountered in the course of development work on the Oregon mineral claim, in Camp Hedley. The crosscut southward from the face of the Bahrs tunnel entered the dike at rather more than 70 ft. in. After describing the dike matter, "The Gazette" observed: "These white dikes in a mineral country are always entitled to respect and it is hoped that in this case the occurrence presages nearness to the ore body. A change has been made in the direction of the drift to more fully investigate the import of this dike and work will go on for a while to enable the owners to size up the situation in relation to further work."

Concerning the Hedley Gold Mining Co.'s scheme to develop power on Similkameen river for an enlargement of the company's mining and milling operations, "The Gazette" says: It is now pretty certain that a few more days will see the work of installing the plant under way. The plan is to divert the water by means of a concrete diversion dam and conduct it by means of about 2,000 ft. of open ditch to a flume along the rocky hillside on the south side of the Similkameen river to a point below where Twenty-Mile creek empties in. There a forebay will deliver the water by means of a penstock on a fall of more than 70 ft. to a power station on the river a little below the sawmill site

and there electric power will be generated which will be transmitted by pole-line to the works.

After nearly four months' diamond-drilling on a group of mineral claims on Twenty-Mile creek, Camp Hedley, the New York Syndicate No. 2 has suspended work for the winter. These claims were bonded last winter by Mr. T. Walter Beam, of Denver, Colorado, for New York principals, among whom are men largely interested in the Hedley Gold Mining Co. Deep snow and steepness of the sides of the Twenty-Mile canyon made the arrangement of preliminaries slow work, so that it was not until early summer it was practicable to commence drilling. Two pipe lines—one for water and the other for compressed air—were laid a distance of rather more than a mile, from the Nickel Plate mine over the mountain to the canyon, and camp was made as well. With three shifts employed and full time worked until cold weather set it and compelled a stoppage, three holes were drilled, two of them deep ones, but no large ore body was found. The cost of the work was approximately \$40,000. Conditionally that favorable arrangements as to payments on account of the purchase money can be made with the claim-owners, it is stated the Denver syndicate will do much more drilling next summer. Mr. Beam was engineer-in-charge and Mr. G. P. Jones, of the Hedley Gold Mining Co. superintended the work done this year.

Concerning the Golden Zone, "The Gazette" recently said:

"The examination of the Golden Zone property which was being made by C. H. Poirier, M.E., on behalf of Mr. Brown has been completed. Delay in getting the mine unwatered was caused by lack of capacity of the only available pump at the mine to handle the water. The large Cameron pump which was part of the Golden Zone equipment was put out of commission at the time of the first shutdown, as some water had been left in it and this being allowed to freeze, burst some of the castings. This time the snowfall and a chinook which set in increased the flow of surface water into the workings in addition to the regular underground flow, but the pump borrowed from the Hedley Gold Mining Co. soon did the work.

"The mine was carefully sampled both in the underground workings and along surface trenches, and the samples obtained were taken out for testing. The story they will tell when assayed will of course have an all important bearing on the general result. It is well known, however, that the examination was not undertaken in any hostile way by either Mr. Poirier or his principal, for both were more or less favorably taken with first appearances and Mr. Brown likes Hedley and the district.

"It is true the affairs of the Golden Zone have been in confusion for some time past and the claims against it which would have to be satisfied will aggregate a sum large enough to require the property to stand up to a pretty hard examination, but there is every reason to believe that Mr. Brown

will take hold and give the mine a chance if the report he receives from Mr. Poirier is at all favorable; and if he does do so and follows Mr. Poirier's directions, the Golden Zone will get a fair chance to make good."

Summit Camp.

The "Similkameen Star" printed the following news from Summit camp, upper Tulameen, on Oct. 24:

Packing winter supplies from Tulameen City to Summit camp has begun. Liveryman Guthrie has the contract for packing the Treasure Mountain Co.'s supplies.

Interest seems to centre in the Treasure Mountain adit at present. J. C. Edwards, the superintendent, let a contract for 100 ft. extension of the adit. This is expected to at least cut the lode.

Jensen and Carlson are sending out some nice chunks of ore from Silver basin. This ore is bedded in the argillite in place of, as the others, cutting the lime. It is heavily charged with lead and zinc, the ore occurring in bands from one to two feet thick and the lode is 12 ft. wide. This strike is new, on property which lies along the north side of the Christmas Box and the Carbonate, one mile north of the Indiana, and one claim length northeast of the Morning Star, one of the Ross mineral claims.

There is another strike to report, also a good one, of steel galena two feet wide. This find is one-half mile west of the Carbonate. J. C. Reilly is the lucky man in this instance. The ore assays from \$30 to \$69 per ton.

The 60-ft. lode has been traced from the south end of the Vigo at the Ross cabin through four claims to the north line of the Carbonate. This is evidently the mother lode of the area. It shows some clean galena and numerous lenses lightly mineralized. It strikes with the mountain range and cuts across the sediments and igneous dikes.

There were eight new discoveries made here last summer.

Princeton.

The Vancouver Exhibition Association awarded special prizes to Voigt camp and also to J. Knudson for splendid samples of copper ore and feldspar exhibits.

Steady shipments of coal are being received at Hedley from the Princeton Coal and Land Co. The biggest customer by far is the Hedley Gold Mining Co., although a considerable quantity is sold as well for domestic use.

The "Similkameen Star" states that the British Columbia Copper Co. either owns or has under option of purchase, 50 mineral claims in Voigt's camp and other parts of Copper mountain. The company employs about 100 men and has four or five diamond drills at work.

Coalmont.

The Hedley "Gazette" recently printed the following comments: "It is a good sign to see the train late on Coalmont days—Mondays and Fridays. It

indicates movement of material to the end of the track a few miles above Coalmont. And it may also indicate renewed activity in coal mining at Coalmont itself. Another feature which is responsible for some late trains is the duty the train crews have to perform every day or two in placing coal cars at the cement works. The original plan of the B. C. Portland Cement Co. to procure their coal supply from the United Empire Co. miscarried through inability of that concern to deliver in sufficient quantity to keep the works going, but the mines of the Princeton Coal and Land Co. are easily taking care of it in addition to supplying their other customers locally and on the outside. The public do not mind the inconvenience of late trains where the lateness is due to growing prosperity of the district in which they themselves are bound in some degree to share."

LILLOOET.

"Lying on the main contact between the coast granite and the interior sedimentaries, the Broken Hill mining property presents features of unusual interest to the mining expert, and I am of the opinion that the contact lead on which the Broken Hill seems to have the crucial location will, with proper development and management, develop into an important producing mine." Mr. F. J. Crossland, M. E., made the above statement to the Vancouver "Sun" and he added that while the property had been looked upon as a copper prospect, it would, in his estimation, develop into a gold mine. He based this assertion on the striking similarity between the Broken Hill ore and that produced by the Nickel Plate, the best gold mine in British Columbia at the present time.

The Broken Hill group lies west of Lillooet, and is owned by Mr. J. Hunt. Mr. Crossland's visit to the property was to verify the reports made by three mining engineers, Messrs. Dunn, Thomas and Guernsey. The last examination checked the three others in every particular. Mr. Crossland found the ore body to average more than 90 ft. in width, and with value in gold, silver and copper.

Cariboo.

The Victoria "Daily Colonist" publishes the following brief report of a Supreme Court case recently dealt with in that city:

Lightning Creek Hydraulic Company vs. John Hopp: Action claiming an injunction and damages. Plaintiff company allege that under a certain water record obtained in 1897 they are entitled to 1,000 inches of water from Lightning creek, and that defendant had taken water from the creek above the company's intake pipe, thus diverting the water which should have gone to them. Defendant alleges that this record is no good, having lapsed some years ago; that it was obtained in 1897, was for five years, was not renewed, and that the defendant having obtained a record in 1898 for 500 inches of water, and having kept this record in good standing ever since, he was, therefore, entitled to the water.

The application was dismissed, with costs.

W. J. Taylor, K. C., for the plaintiff company; Davis, K. C., Maclean, K. C., and James Murphy for defendant.

The Cariboo "Observer" states that the work of driving the tunnel on the property of the West Canadian Deep Leads at Little Valley is being pushed on as rapidly as possible. It is intended, shortly, to work from the shaft end also, and should this be done there will be 40 or more men employed about the works.

An American mining syndicate, holding an option on several leases on Little Valley creek, is preparing to test the ground with a Keystone drill with a view to in the near future establishing a dredging plant. Mr. John T. Powers, who arrived in the district during October, will have charge of the operations. A little difficulty has been experienced in moving the Keystone drill to the place where the drilling is to be done. It was expected, however, that drilling would be in full swing before the end of the month.

Quesnel.

Mr. Hehson reports that excellent progress has been made in the development of the Yanks mineral claim, on Snowshoe creek. In the lower tunnel the vein is 8 ft. in width, and the ore contains good value in gold.

Mr. Howard W. DuBois, of Philadelphia, recently returned to Quesnel from a trip up the east arm of Quesnel lake. It is reported that he was engaged in investigating for power purposes, falls, the height of which is about 150 ft. with a flow at low water, of approximately 7,000 inches.

Hope.

The "West Yale Review" lately printed the following news of mining in the district about Hope:

Mr. Alex. Sharp, of Vancouver, recently visited the Aufeas and the Araucumo and was favorably impressed with both properties.

W. Robinson has returned from 23-Mile where he has spent about two months doing development work on the Silver Daisy. He has now in the face of the tunnel 13 in. of solid high-grade galena.

The request of the owners of the Araucumo mine for wagon road connection with the Cariboo road has been favorably considered by the Provincial Government. D. G. Sutherland, district road superintendent visited the property on Oct. 24, and construction is to begin at once. As soon as it is completed machinery will be taken in and development of the mine will be commenced.

Later—The equipment for the Araucumo mine is now all on the ground and the work of sinking a new shaft will begin in November.

The property of the Siwash Creek Gold Mines Company seems to be showing in good results after long years spent by the promoters in working

them. From the Vancouver "Daily Province" it is learned that during October about 50 of the shareholders of Siwash Creek Mines, Ltd., went on a special excursion over the C. N. R. line to visit the property of the company. The trip was arranged in order that the members might be familiar with the developments carried on during the past year.

On Oct. 29, two shifts were started at the Aufeas mine. A round of holes is fired at the close of each shift. H. V. Dardier, president, and A. E. Raab, secretary, visited the mine on 31st. The southerly drift from the main tunnel, to which the work is now confined, is now all in ore. There is now 4 ft. of solid mispickel ore of high-grade. Mr. Dardier, to whose efforts the present position of the company and the property are due, is entirely satisfied with the outlook and will remain to take personal charge of operations. Through the winter the high-grade ore will be rawhided down a snow trail over the right-of-way cleared for the tramway. For the rest ample storage room has been made near the tunnel mouth. In the spring the aerial tramway will be built to the highway, and a 20-stamp mill and concentrator will be erected. The plant will include roller crusher, amalgamation plates and Wilfley concentrating tables. The concentrates will be shipped to the Tacoma smelter.

Vancouver.

A private sale of the Diamond Vale Coal Company's properties was sanctioned on Oct. 30 by Chief Justice Hunter and so the advertised sale by auction did not take place. The order for the sale by auction had been taken out by the solicitors for M. Barbey, a Parisian capitalist, who held a mortgage on the property. As the amount realized by the private sale will satisfy the mortgage and costs it was consented to by all parties.

F. J. Mogridge, a mining man, who has just returned to Vancouver from a trip of inspection and investigation of the mineral belt near the headquarters of the Indian river, brings an enthusiastic report of the possibilities of the copper deposits of that district. The showings, he says, are remarkably good, and at present a crew of government forestry men are engaged in cutting a trail into that district, which when completed, will make it possible to enter it by way of Wigwam inn at the mouth of the Indian river. The newly-located London group was also inspected on the trip and Mr. Mogridge says the surface samples showed \$23 in copper and gold, and 2 oz. in silver to the ton.

T. G. Corkhill, of Spokane, was in Cranbrook this week and has gone to Wild Horse creek to look over the Golden Five group of claims, situated in the forks of Wild Horse. On the property located in 1895, there is a gold-bearing ledge on which a considerable amount of development work has been done. Dave Griffith is owner and he is willing to give an option on it, providing that a certain amount of development be done within a stated time.

MINERAL RESOURCES OF AINSWORTH MINING DIVISION.

The following interesting notes on the mineral resources of parts of Ainsworth mining division are printed from the Kaslo "Kootenian":

Wm. Thomlinson, of New Denver, who was in Kaslo and vicinity a couple of weeks collecting mineral specimens on behalf of the Provincial Department of Mines, has completed as much as has been practicable of his work in Ainsworth mining division this year, and considering the fact that only about 60 per cent. of the division has been covered, has secured a fine collection, numbering in all nearly 300 sets of samples. Of this number about 140 were secured at Ainsworth, 55 from the South Fork of Kaslo creek, about 50 from Kaslo and the remainder from various other points. Mr. Thomlinson was unable to cover the northern part of the district, but hopes to be able to pay attention to the Lardeau and the Duncan section next year.

Mineral Samples for Exhibition.

The samples were secured, wherever possible in sets of three. They were shipped direct to Victoria, being carefully wrapped in burlap, each set containing particulars of the location of the property, the names of the owners and the assay value of the ore. At the provincial mineralogist's office at the capital they will be prepared for exhibition purposes, many of them to be forwarded to San Francisco in 1915 for exhibition as part of the provincial display at the Panama Exposition. Others will be used in other exhibitions and some will go to form a permanent provincial mineral exhibit in London.

Although an old-timer in the Kaslo-Slocan district, Mr. Thomlinson was astonished at the mineral wealth of the Ainsworth mining division. He knew that the district was rich in resources of that kind, but he had no idea, so he stated that the district possessed such showings, until he was able to make a personal examination of so many of the prospects and partly developed properties. He was particularly enthusiastic about the South Fork of Kaslo creek and Ainsworth camp.

Not a Low-Grade Camp.

"The impression is prevalent," he said, "that Ainsworth camp is a low-grade one. As a matter of fact it is a high-grade producer rather than a low-grade one. Again, there has been a misconception regarding the veins there, the idea being general that they are of the hedged variety. Many of the fissures undoubtedly are bedded, or run with the formation, but the prejudice against this class of vein is dying out, as now they are being discovered to be as prolific of ore production as those that cut across the formation. Again there are all kinds of ledges connecting these veins, and they cut across the formation, so it is quite likely that development will in time show the Ainsworth section to be literally honey-combed with ore, some of it low-grade but most of it high-grade.

South Fork of Kaslo Creek.

"It is hard to understand why such a promising section as the South Fork of Kaslo creek has been dormant so long. There is a belt there extending along the south side that is remarkable for its ore showings and possibilities in the way of mining development. It is undoubtedly one of the richest mineral bearing areas of the country. If I were in the business of legitimate mine promotion, or had the capital and was on the lookout for properties that promised quick returns, there are four propositions along the South Fork of Kaslo creek that I would unhesitatingly tackle in preference to any other undeveloped propositions that I know of today. Of course that district has lacked capital for the necessary development, and latterly the unsettled railway condition has militated against it but the time is not far distant, when, with a standard-gauge railway running past the junction of the two streams, and confidence in the transportation future of the district assured, that the tonnage that will be rendered available along the South Fork will make necessary the construction of a railway up that stream as well. At one property up there, the Liberty Hill, I was able to secure the richest samples of lead ore I have ever encountered. It ran 85 per cent. lead, very near the theoretical.

Timber Resources Also.

"And the timber. There is a tremendous area of first class mining and milling timber in that immense basin and what I saw of that was no less astonishing than the mineral resources. Added to this is the fact that a splendid wagon road, almost on a railway grade, traverses the entire valley, and it is easy to imagine that the time must come, and sooner than many of us realize, when the South Fork section must emerge into prominence as one of the most important mineral producing sections of the province.

A Great Mineralized Area.

"I consider the district lying between Kootenay and Slocan lakes as being one of the greatest mineralized areas I have ever seen. It is now only in its beginnings as a mining section, and over on Slocan lake we are feeling a strong mining revival, not a boom, but a commencement of permanent activity, which you people on this side of the divide must soon, in the very ordinary course of things and events, have a share in. On all sides are evidences of capital seeking legitimate mining investments and the activity that is bound to follow in our rich district will be startling."

PLACER GOLD IN THE SOUTHERN YUKON.

After sitting on the fence and watching stampedeers pass this way to Chisana all summer, Whitehorse now has a placer excitement just outside of her front gate. And it looks good, too.

Lately, George M. Stevens, one of the pioneer miners of Southern Yukon, came to Whitehorse and quietly informed a few of his friends of a discovery—three discoveries in fact—which he had made in the vicinity of Dugdale lake, 10 miles south of the town, one on Wolfe creek, the two others on old river beds in the same vicinity. Stevens, who has valuable quartz holdings back from Robinson, 22 miles up the railroad, had first "wised" the Wheaton miners of his discoveries and six or eight of them staked claims. Geo. Armstrong and C. A. Mowry "took a walk" Sunday and staked on Wolf creek and one of the dry beds. Monday morning Captain P. Puckett and E. J. Curtis, W. A. Puckett and E. J. White went out on the train and all staked on Wolf and Extension. (As not one of the four weighs less than 200 lb., the discoverer did not ask them to enter the free-for-all race for claims.)

By Monday evening the whole town was excited. The news had been whispered around that a discovery had been made and several claims had already been staked. By nine o'clock that night between 30 and 40 men were hiking southward. Some on horseback, some in wagons, some on hand-cars, but the majority on foot—professional men, mechanics, laborers, loafers, rich men, poor men—but no beggars or thieves. Those who used horses and handcars beat some of the "mushers" by only a few minutes, but all staked claims and tired and weary men were wandering back to town from five o'clock in the morning until noon of Tuesday. About a dozen went on Tuesday's train and secured claims "away up creek" and that night a delegation from Tokio hot-footed it out and staked further up and within the shadows of old Golden Horn. In all, nearly 100 claims have been staked and others will be staked.

The small amount of prospecting done on the creeks justifies the stampede. Experienced miners who have panned in the first hole—a mere surface scratch made by Stevens on Wolf creek—say the dirt would wash an ounce per day to the shoveler if sluice boxes were used. From \$8 to \$12 per day is the estimations placed on the other two creeks, only dry creek beds.—Whitehorse "Star."

A report from New York states that the Granby Consolidated Co. has released its option on the Mount Andrew copper group in Alaska, one of the producing copper mines on Prince of Wales island. No reasons are assigned by Granby officials for failure to exercise the option.

In September the McGillivray Creek Coal Co., at Coleman, Alberta, shipped 14,600 tons of coal.

The Surprise mine, on the divide east of Cody, Slocan, lately made a shipment of silver-lead ore which was the first from that mine for nine years. It is expected that ore will be sent to Trail every month from now on.

PERSONAL AND GENERAL

Movements and News
of Prominent Mining Men

Written for the B. C. Mining
Exchange by E. JACOBS

Mr. W. H. Aldridge, of New York, formerly managing director of the Consolidated Mining and Smelting Company, of Canada, Ltd., now managing director of the Inspiration Consolidated Copper Co., has been elected a member of the American Mine Safety Association, which held its annual meeting at Pittsburgh, Pennsylvania, at the end of September.

Mr. A. W. Allan, of Victoria, has been in Winnipeg, Manitoba, conferring with the directors of the Lucky Jim Zinc Mines, Ltd., as to arrangements for a resumption of operations at the company's Lucky Jim mine, in Slocan district. Since the death of the managing director, the late Mr. Thos. G. Procter, Mr. Allen has been in charge of the company's affairs in British Columbia.

Mr. W. S. Ayres, of Hazelton, Pennsylvania, who some years ago was on the engineering staff of the Bankhead Mines, Ltd., operating coal mines near Banff, Alberta, has been examining some mining property in Similkameen district, to which part of the province he accompanied Mr. D. E. Moore, of Salt Lake, Utah, and Mr. W. E. A. Wheeler, of New York City.

Mr. Melbourne Bailey, manager of the John Hopp hydraulic placer gold mines in Cariboo district, was in Victoria for several days in October. He was a witness in a water-record dispute that was before the Supreme Court. Before returning to Barkerville, he paid a short visit to his home in Tacoma, Puget Sound, Washington.

Mr. William Barker, lessee of the Arlington gold mine, in Erie camp, Nelson mining division, was a recent visitor to Butte, Montana.

Mr. T. Walter Beam was in Victoria lately, having accompanied Mr. I. L. Merrill, president, and Mr. G. P. Jones, general superintendent, of the Hedley Gold Mining Co., from Hedley to the capital, where matters connected with water rights on Similkameen river had their attention.

Mr. A. J. Beaudette has gone to New York to report to his principals the result of the 1913 season's work on a coal property situated in Dockrill's basin, southeast of Hazelton, Omineca mining division.

Mr. L. A. Bonner, of Barkerville, Cariboo, was in Victoria during the month prosecuting the suit against Mr. John Hopp, whom he sought to restrain from using certain water in Cariboo district. Mr. Bonner is manager of the West Canadian Deep Leads Co., which is developing a placer-gold mining property in that district.

Mr. W. M. Brewer returned to Victoria late in October from a horse-hack trip over more than 1,000 miles of country in Lillooet and Kamloops districts.

Mr. G. O. Buchanan, of Kaslo, Supervisor of Lead Bounty, has been spending a short time on the Coast.

Mr. W. Buchanan, superintendent of the Yankee Girl mine, near Ymir, was in Spokane, Washington, recently.

Mr. Chas. Camsell, of the Geological Survey of Canada, on October 10 gave an address illustrated by lantern slides, under the auspices of the Vancouver Chamber of Mines, in which he dealt with the mineral resources of the MacKenzie River district, and he added some notes on parts of the Similkameen district.

Mr. Chas. F. Caldwell, of Kaslo, managing director of the Utica Mines Company, was a visitor to Winnipeg during the month.

Mr. F. B. Chettleburgh was down from the Skeena district about the close of October.

Mr. Patrick Clark, of Spokane, Washington, who holds a comparatively small proportion of the shares in the Standard Silver-Lead Mining Co., was at that company's property near Silverton, Slocan lake, during the month.

Mr. C. A. Congdon, of New York, one of the directors of the Hedley Gold Mining Co., was a recent visitor to the company's Nickel Plate group of mines and 40-stamp mill, in Camp Hedley, Similkameen.

Mr. E. J. Conway, for some time with the Tyee Copper Co., is now in charge of the camp the Granby Consolidated Co., has established at Swamp point, near Maple bay, Portland canal, in the vicinity of which place are some large deposits of limestone on claims purchased by the company in case lime flux shall be needed when the company's blast furnaces shall be in operation at Anyox, Observatory inlet, a towing distance of 65 miles.

Mr. Chas. L. Conn, who lately retired from the position of superintendent for the Coronation Mines Ltd., on Cadwalader creek, Lillooet district, has been investigating placer ground in the vicinity of Whitewater river, also in Lillooet mining division.

Mr. H. V. Dardier has returned from England and is now directing operations at the Aufeas mine, near Hope.

Mr. F. M. Dockrill is down from the Skeena country, in which he is interested in a coal property.

Mr. W. M. Doull, of Montreal, Quebec, long president of the West Kootenay Power and Light Co., which supplies power to the larger mines and the smelting works of Rossland, Trail, and Boundary district, died a short time ago. He has been succeeded as president of the company by Mr. Chas. R. Hosmer.

Mr. D. B. Dowling, one of the senior geologists of the Geological Survey of Canada, left Ottawa on October 23 for the Okotoks district, south of Calgary, Alberta, to make investigations there in connection with the reported recent encountering of oil in a bore in that part of the country.

Mr. Howard W. DuBois, well-known in connection with the Quesnelle Hydraulic Gold Mining Co.'s extensive preparations for washing gravel on a placer-gold property in Quesnel mining division, was in Victoria and Vancouver during the latter part of October.

Mr. Oliver Durant, who was closely connected with the beginning of commercial mining in Rossland camp, was thus referred to by the Rossland "Miner," on Oct. 15:

"Oliver Durant, formerly owner of the Centre Star mine, which he sold to the Gooderham-Blackstock people for \$2,000,000, has removed from Culpepper, Va., and is now making his home in Washington City. There is no former resident who takes such a keen interest in the camp. Mr. Durant never misses an issue of "The Miner," and often sends a few congratulatory words of the progress. This week he writes: 'I am indeed pleased to learn from articles in your paper that my old mines and camp are doing well. The interest the geologists manifested in the mines surrounding Rossland will induce many to undertake the development of locations that have lain idle for want of means and confidence.'"

Mr. Stanley A. Easton, now manager of the Bunker Hill & Sullivan Mining and Concentrating Co., at Kellogg, Idaho, who some years ago was manager of the Gold Drop mine, in Phoenix camp, Boundary district, has been appointed by the Governor of Idaho a member of the commission to draft a workmen's compensation act for that state.

Friends of Mr. Geo. Watkin Evans, who last year gave much attention to the Groundhog basin coal field, in the northern part of Skeena district, may be interested in the news that the U. S. Government party of which he is in charge is reported to have been mining coal of an excellent quality in the Matanuska field, Alaska. Some 800 to 900 tons has been mined and during the winter this is to be hauled in sleighs to tidewater on Knik arm of Cook inlet, and shipped thence south in barges for trial to one of the ships of the United States navy.

Mr. George E. Farish, according to "Mining and Scientific Press" for Oct. 25, had left Nelson, B. C., and intended to stay in San Francisco on professional business, until Nov. 1, before returning to New York.

Mr. Chas. Fergie, of Montreal, one of the prominent members of the Canadian Mining Institute and a widely-known coal mining engineer, was recently at coal mines in Alberta, of which he has charge as engineer. He was accompanied by Mr. J. M. Gordon, an engineer on his staff.

Mr. R. D. Fetherstonhaugh has returned to Vancouver from the placer

mining property, on Quartz creek, of the Omineca Gold Mines Co., which has closed its 1913 season's operations in the Omineca country.

Mr. W. E. Finch, manager for the Finch syndicate which has for some time been developing the Idaho-Alamo mines, in Slocan district, has left New Denver, says the "Slocan Record," to spend the winter in Spokane. He will probably return to the Slocan next April to continue development of the properties mentioned.

Mr. J. J. Fingland, says the "Kootenai-an," has returned to Kaslo from Whitewater camp, having completed the season's assaying there for J. L. Retalack & Co., who are operating the mines of the Whitewater and Whitewater Deep group.

Mr. J. P. Forde, Dominion engineer resident in Kootenay, has been up the Duncan river, with the object of obtaining information for a report on the practicability of opening that stream for navigation.

Mr. Irving R. Gard, for nearly three years engineer in charge of the drafting room of the Canadian Collieries (Dunsmuir) Limited, at Victoria, left that city about the middle of October for the United States, the important engineering works the company has had in hand during that period having been advanced nearly to completion. It is probable Kentucky will be the next scene of Mr. Gard's professional activities.

Mr. W. Godfrey, of the B. C. Anthracite, Ltd., came to Vancouver during the month from the Groundhog coal basin, where he had been engaged in developing coal measures throughout the 1913 field season.

Mr. A. I. Goodell, for several years manager of the smelting works at Boundary Falls, and afterward at Northport, Washington, now devotes most of his time to the affairs of the Idaho-Continental Mining Co., operating near Porthill, Idaho. He was lately one of a number of guests to a birthday banquet given at the Silver Grill, Spokane, by the chief accountant for the Idaho-Continental Co. Mrs. Goodell and children have returned to Spokane from a three months' visit to relatives in Pueblo, Colorado.

Mr. Thomas Graham, chief inspector of mines, has been on an official visit to the coal mines of the Crow's Nest district. While in that part of the country he availed himself of an opportunity to try he availed himself of an opportunity to berta, in the vicinity of which large coal mines have been operated for many years.

Mr. Wilbur D. Greenough, manager of the Atlas Mining Co.'s mines in Whitehorse copper camp, southern Yukon, passed through Vancouver both going to and coming from Spokane, Washington, where he went for a few weeks' vacation.

Mr. J. C. Gwillim, professor of mining engineering at the School of Mines, Kingston, Ontario, has returned to his duties there after having spent the summer in western Canada.

Mr. B. F. Haanel, chief of the Division of Fuels and Fuel Testing, Mines Branch of the Canada Department of Mines, is in the West, investigating different deposits of bituminous and lignite coal with a view to determining whether it will be possible and commercially profitable to utilize many millions of tons of these minerals now lying unused. Consignments of 25 tons each sent to Ottawa from five mines have already been tested as regards suitability for use in gas producers, and later tests are to be made to ascertain whether these coals may be advantageously used under boilers. So far the department has had considerable success, and it is hoped the chief result of its investigations and tests will be that much of the coal to which attention is being given will be shown to be capable of being used profitably in a commercial way.

Mr. F. T. Hamshaw, formerly manager of a placer-gold mine on McKee creek, Atlin, after having obtained an option on several of the best known claims in Shushana gold fields, Chisana River district, Alaska, left that country last month for "the outside," to make arrangements for operating them next placer-mining season.

Mr. John M. Harris, of Sandon, Slocan, was in Spokane, Washington, recently. Afterward he went shooting wild geese on the Kootenay river flats.

The Juneau "Empire" said last month "The handsome new cruising launch, 'Hyak,' belonging to Phil J. Hickey, the well-known Seward mining man, left for the westward on 24th. Mr. Hickey, who has large interests on Kenai peninsular, recently arrived from Seattle on board the craft to attend to some business matters in Juneau. He expects to proceed to Seward on one of the regular ships in a few days." Mr. Hickey will be remembered in Slocan district, where, for several years he was manager of the Ivanhoe mine and concentrating mill, near Sandon.

Mr. Arthur Hickling, managing director of the Princeton Coal and Land Co., having large interests in Similkameen district, has lately been on one of his periodical visits to the Province from England.

Mr. A. B. W. Hodges, formerly local manager in Boundary district for the Granby Consolidated M. S. and P. Co., and afterward for three years general manager for the Cerro de Pasco Mining Co., operating in Peru, has opened an office as mining and metallurgical engineer, at Los Angeles, California.

Mr. H. L. Hollis, of Chicago, Illinois recently examined the Sunrise mine, above Cody, Slocan, to which property he was accompanied by Mr. Alex. Smith, manager, of New Denver.

Mr. John Hopn had to spend several days of this month in Victoria, resisting an attempt to deprive him of a long-held water right, in his lawful possession of which he has now been confirmed by the Provincial Mines and Water Departments and the Supreme Court of British Columbia.

Mr. Elmer A. Holbrook, at one time resident at Hedley, Similkameen, where

he was connected with the 40-stamp mill in operation there, and later professor of mining engineering in the Nova Scotia Technical College, Halifax. Nova Scotia, has been appointed assistant professor of mining engineering at the University of Illinois, to have charge of the recently equipped coal-washing and ore-dressing laboratory and the course in mine design.

Mr. D. C. Jackling, of Salt Lake City, Utah, who some years ago was best known in the Northwest in connection with the erection and equipment of a costly gold-ore mill at Republic, Washington, recently spent several days cruising in British Columbia waters in his steam yacht "Cyprus," with a party of associates with whom he had been on a trip to Juneau district, Alaska, where preparations are being made for large gold-mining and milling operations in which they are interested.

Mr. L. N. Jenssen, stated by the "West Yale Review" to represent MacKenzie & Mann interests, has been examining mining properties in the vicinity of Hope.

Mr. Robert Keffer, son of Mr. Frederic Keffer, of Greenwood, Boundary district, has been appointed assistant mining engineer at the Stewart mine, Kellogg, Idaho. Since graduation he has been engaged in the laboratory of the British Columbia Copper Co.'s smelting works at Greenwood.

Some time ago there was a Mr. Knobel active among mineral claims in Portland Canal district. A press despatch from Port Arthur, Ontario, dated Oct. 21, said: "Mr. H. E. Knobel, well-known in Port Arthur for ten years as an explorer and prospector, has returned from a six weeks' trip in the North country. He says that at watershed between Albany river and streams that flow south, he found a new lake with two outlets, one leading to Albany river and Hudson's bay and the other to the Nipigon, the lake thus draining into two oceans, the Arctic and the Atlantic.

Mr. Oscar Lachmund, general manager for the British Columbia Copper Co. has returned to Greenwood, Boundary district, from a visit to the Company's head office in New York City.

Mr. Andrew G. Larson, after a trip to Rossland and Slocan, has returned to his headquarters in Vancouver.

Mr. H. H. Lavery, at one time with the Mt. Stephen Mining Syndicate, of Vancouver, at its Monarch mine, near Field, has joined the staff of the Mond Nickel Co., at its Worthington mine.

Mr. Frank D. Little, engineer for Hon. Jas. Dunsmuir, Victoria, has been at the latter's Nohle Five group of mines, near Cody, Slocan, where more development of an important nature is being undertaken.

Mr. O. E. LeRoy, of the Geological Survey of Canada, has been in several of the West Kootenay mining camps and on the Coast since the close of the International Geological Congress excursions to the West.

Mr. Ernest Levy, of Rossland, representative in British Columbia of the
(Continued on page 29.)

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VANCOUVER, B. C., OCTOBER, 1913.

EDITORIAL.

The annual report of the Granby Mining, Smelting & Power Co., Ltd., which we publish in part at the commencement of the present issue, makes very interesting and encouraging reading. To those who, like the B. C. Mining Exchange, have an abiding faith that the mineral industry in British Columbia is the chief of all our valuable resources and is the soundest and most profitable investment for well-administered capital, the extensive and successful operations of the Granby company are a source of the utmost satisfaction, since they indicate the lines upon which mining in this province can be made the success it deserves to be, and also the wide scale of developments of which they are the successful pioneers. The steady decrease in the cost of production is a feature which will attract the careful attention of mine managers and mine engineers all over the province, for it is no secret that unduly expensive and unsuitable production methods have been the real cause of the non-success of many mines here. The mining men of the Coast districts will read with peculiar interest the particulars given of the company's large mining and smelting un-

dertakings at Anyox Bay on Observatory Inlet. The enormous outlay of capital involved in these operations, when made by so successful and well-managed a company as the Granby, is a most convincing proof of the confidence these people must feel in the dividend-paying capacity of their huge investment. Men of this stamp do not put millions of dollars into the ground for fun—or for the sake of catching the labour vote, after the manner of our municipalities. They invest their money, as every wise man should, after the most careful investigation of the purposed investment, and the fact that they have, after such investigation, decided to operate on so gigantic a scale, is an absolute guarantee of the successful future of the mining industry in the Northern and Coast districts of this province. Indeed, if proof be required of the wisdom of their judgment, it is already being supplied by the results of the mining development around Hazelton and other north-coast districts, particulars of which are given in another column.

Interest in the oil resources of Western Canada has been showing a marked increase of late, and the situation in Alberta has assumed the proportions of a veritable boom. So many enquiries have been received by the B. C. Mining Exchange in regard to this subject, that it has been thought advisable by the management to send a representative into the new oilfield to report on conditions. Mr. R. G. Stark, of the firm of Dolling & Stark, Vancouver, is now accordingly at the scene of the excitement, and his report will appear in our November issue.

Particulars of another oil development are given in this issue, as outlined in the report of the Pacific Canadian Oilfields, a company which is investigating oil occurrences and indications upon and in the vicinity of the islands known as North and South Pender, Mayne, Satorua and Tumbo. Some further details of these operations will also be given in our next issue.

We are in receipt of the following communication from the Bureau of Provincial Information, with reference to an error which appeared in our August issue. We gladly take this opportunity of giving the fullest publicity to the correction, as it has an important bearing on the much-discussed question of settling-up lands in this province. The letter, under date of 30th September, is as follows:—

"The Editor, B. C. Mining Exchange & Engineering News, Vancouver, B. C.

"Dear Sir,

"I beg to point out that a discrepancy occurs in your edition for the month of August last, under the heading of "Pre-emptors' Laws in British Columbia," paragraph 2, page 38, regarding price of Crown land. This should be deleted, as an amendment to the Act was made at the last session of the Legislative Assembly to the effect that all pre-emption land is now free.

"I should, therefore, be pleased if you would kindly make the necessary correction, as it is very misleading to 'ntending pre-emptors. Yours truly,

"(Sgd.) F. JENNE FLEURY,
Acting-Secretary."

The Prince Rupert Fair appears from all accounts to have been a magnificent success, and in this connection the B. C. Mining Exchange would like to tender its especial congratulations to the citizens of Stewart for the splendid exhibit of Portland Canal ores which they sent to Prince Rupert, and for the long list of prizes which they won. A list of these winners appears in another part of this issue. Owing to the successful prosecution of the big undertaking of the Portland Canal Tunnels, Ltd., whose long tunnel is now nearing completion, the mines of the Portland Canal district are again coming to the front, and it is pleasant to be able to record so extensive a testimony as to the value of their ores as was furnished by the decisions at the Prince Rupert Fair.

Mr. Stark, of Messrs. Dolling & Stark representing the B. C. Mining Exchange, has just returned from a trip to Alberta, where he has been investigating the oil strike in the Calgary district—a full report of which will be given in our next issue. Samples of oil obtained from the Dingman boring, maps, etc., can be seen at the Exchange Offices, Suite 1, 658 Granville St., and information furnished. The Exchange has reliable agents in Calgary, and is in a position to keep in close touch with any fresh developments that may occur.

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LATEST METAL MARKETS.

(From Chicago Mining and Engineering World.)

Silver—Quotations at New York for bar silver per fine ounce and at London per standard ounce for the week ending Oct. 22, were as follows:

	New York	London
	Cents	Pence
Oct. 16	61½	28½
Oct. 17	61½	28½
Oct. 18	61½	28½
Oct. 20	61½	28 5-16
Oct. 21	61½	28½
Oct. 22	61	28 3-16

MONTHLY AVERAGE PRICES OF SILVER

	New York			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	63½	61½	62.928	56.259
February	62½	58½	61.625	59.043
March	59½	56½	57.969	58.360
April	60½	57½	59.540	59.265
May	60½	59½	60.360	60.754
June	60½	58½	58.975	61.265
July	59½	58½	58.423	60.615
August	59½	59	59.27	61.600
September	61½	59½	60.650	63.364
October	...	...	...	63.504
November	...	...	...	62.750
December	...	...	...	63.390

Year 60.837

Copper—Copper was dull last week but prices showed greater firmness. Electrolytic is still quotable as low as 16 5-8 cents delivered 30 days, but the amount available at the lower figure is less than a week ago. The leading producers are still holding to 16 7-8 cents. In Europe a small amount has been sold at the equivalent of 16 7-8 cents, with many consumers offering 16 3-4 cents. Early in the week electrolytic sold at New York at 16 1-2@16 1-4 cents for Nov.-Dec. shipment and some January business was also placed with second hands at the same prices. At the close of the week business was done between 16 1-2 and 16.60 cents cash for the year's delivery. In Europe prices for American electrolytic ranged between £76 and £77, the market being nominal at the close at £76 15s to £77 for shipment within the next 60 days.

Exports of copper reported from Atlantic ports for the week ending Oct. 16, were 6,779 tons, and since Oct. 1, 15,221 tons.

Standard copper at New York was dull and largely nominal with holders asking 16 1-2 cents for spot and December positions, inclusive, and 16 cents fixed as the settling price.

The fluctuations in Europe resulted in a net advance of £2 on spot and £1 17s 6d on futures, with a fair volume of business throughout the week. Best selections of European copper were advanced £1 5s net for the week, the closing price being £77 net.

Quotations for copper per pound at New York and per long ton of 2,240 lbs. at London for the week ending Oct. 22, were as follows:

	Lake	Elec	Cast	Standard	London
Oct. 16	17-16½	16½-16½	16½-16½	16½-16½	£72 11 6
Oct. 17	17-16½	16½-16½	16½-16½	16½-16½	73 5 9
Oct. 18	17-16½	16½-16½	16½-16½	16½-16½	74 7 6
Oct. 20	17-16½	16½-16½	16½-16½	16½-16½	74 17 6
Oct. 21	17-16½	16½-16½	16½-16½	16½-16½	75 0 0
Oct. 22	17-16½	16½-16½	16½-16½	16½-16½	75 0 0

MONTHLY AVERAGE PRICES OF COPPER

	New York—Lake Superior			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	18	16½	17.116	14.526
February	16½	15½	15	14.606
March	16½	15½	15.306	14.911
April	16½	15½	15.731	16.092
May	16	15½	15.956	16.391
June	16½	14½	15.445	17.612
July	16½	14½	14.770	17.536
August	16½	15½	15.697	17.694
September	17	16½	16.857	17.724
October	...	...	...	17.753
November	...	...	...	17.750
December	...	...	...	17.750

Year 16.695

	New York—Electrolytic.			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	17½	16½	16.983	14.425
February	16½	15	15.717	14.435
March	16½	15½	15.065	14.853
April	16½	15½	15.620	16.003
May	16	15½	15.896	16.326
June	16½	14½	15.203	17.505
July	16½	14½	14.646	17.418
August	16½	15½	15.787	17.694
September	17	16½	16.800	17.706
October	...	...	...	17.745
November	...	...	...	17.750
December	...	...	...	17.750

Year 16.634

Tin—The tin market was quiet last week. Lower prices prevailed for a few days followed by an advance in sympathy with foreign markets, and the result of the week's fluctuations was a rise here of about 1-4 cent per pound on all positions. Nearby positions are slightly lower at the close as compared with future positions.

At the close of the week spot and October tin sold at 40 1-2 cents; November and December positions were held at 40 5-8 cents, with 40 1-2 cents bid. Few if any limits were received for the east on Saturday and the demand here was light.

The London market for standard contracts last week was moderately active and irregular, but stronger at the close of the week, with a net advance of £1 10s on spot and £1 5s on futures.

The Singapore market continued relatively stronger than either London or New York and up to Friday advanced 5s net, when the quotation was at the equivalent of £187 c. i. f. London, but in sympathy with the English market this price was about £1 lower at the close.

Quotations for tin at New York and at London for the week ending Oct. 22, were as follows:

	New York		London	
	Oct. 16	Oct. 22	Oct. 16	Oct. 22
Oct. 16	41.00-40.75	41.87	0 0-186	15 0
Oct. 17	40.75-40.25	185	15 0-185	15 0
Oct. 18	...	...	...	...
Oct. 20	40.30-40.00	185	5 0-184	10 0
Oct. 21	40.20-40.00	184	7 6-183	17 0
Oct. 22	40.60-40.25	186	0 0-185	10 0

MONTHLY AVERAGE PRICES OF TIN

	NEW YORK.			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	51.25	49.50	50.414	43.275
February	50.30	47.30	48.738	43.345
March	48.50	45.62½	46.844	42.690
April	50.25	47.37½	49.075	43.970
May	50.75	47.10	49.15	46.055
June	46.75	42.50	45.071	48.046
July	47.75	38.75	40.349	44.665
August	42.80	40.55	41.561	45.849
September	43.87	40.75	42.377	49.232
October	...	...	...	50.073
November	...	...	...	49.869
December	...	...	...	49.899

Year 46.330

Lead—Lead was heavy, weak and 10 points lower. On call at the New York Metal Exchange 4.30 cents was bid for spot, October, November and December, with 4.40 cents asked, on Friday. On call at East St. Louis spot, October, November and December offered at 4 1-4 cents, with 4.15 cents bid for each position, on Friday.

London advanced 5s net last week. Spanish closed at £20 7s 6d, against £20 2s 6d on the preceding Friday.

Quotations for lead at New York and at London for the week ending Oct. 22, were as follows:

	New York	London
	Cts. per lb.	Per Ton
Oct. 16	4.50-4.30	£20 2 6
" 17	4.40-4.30	20 7 6
" 18	...	...
" 20	4.50-4.30	20 10 0
" 21	4.50-4.30	10 10 0
" 22	4.50-...	20 7 6

MONTHLY AVERAGE PRICES OF LEAD

	New York			
	1913	1913	1913	1912
Month.	High	Low	Avg.	Avg.
January	4.37½	4.25	4.301	4.435
February	4.35	4.25	4.30	4.068
March	4.40	4.25	4.340	4.167
April	4.45	4.30	4.381	4.213
May	4.55	4.25	4.418	4.164
June	4.40	4.25	4.336	4.395
July	4.50	4.30	4.355	4.669
August	4.85	4.45	4.740	4.581
September	4.75	4.60	4.692	5.071
October	...	...	...	5.088
November	...	...	...	4.633
December	...	...	...	4.390

Year 4.482

Spelter—Spelter was dull, weak last week and 5 to 10 points lower. On call at the New York Metal Exchange 5.35 cents was asked and 5 1-4 cents bid for all positions, from spot to December, on Friday. On call at East St. Louis Exchange 5 cents was bid and 5 1-4 cents asked for spot, October, November and December, on Friday.

London declined 5s net last week. G. M. B. closed at £20 10s, against £20 15s on the preceding Friday.

Quotations for spelter at New York and at London for the week ending Oct. 22, were as follows:

	New York	London
	Cts. per lb.	Per Ton
Oct. 16	5.35-5.25	£20 10 0
Oct. 17	5.35-5.25	20 10 0
Oct. 18	...	...
Oct. 20	5.35-5.25	20 10 0
Oct. 21	5.35-5.25	20 10 0
Oct. 22	5.45-5.35	20 10 0

MONTHLY AVERAGE PRICES OF SPELTER

	New York				London.	
	1913	1913	1913	1912	1913	1912
Month.	High	Low	Avg.	Avg.	Avg.	Avg.
Jan.	7.40	6.40	7.192	6.505	26.115	26.721
Feb.	6.80	6.15	6.406	6.541	25.385	26.457
Mar.	6.45	5.70	6.222	6.817	24.130	26.035
Apr.	5.95	5.45	5.712	6.799	25.305	26.646
May	5.55	5.25	5.477	6.85	24.385	25.520
June	5.35	5.00	5.169	7.011	22.227	25.765
July	6.65	4.30	5.279	7.229	20.609	26.173
Aug.	5.95	5.55	5.760	7.042	20.674	26.434
Sept.	5.95	5.60	5.820	7.553	21.116	27.067
Oct.	...	...	...	7.550	...	27.551
Nov.	...	...	...	7.429	...	26.756
Dec.	...	...	...	7.331	...	26.880

Year ... 7.053 ... 26.317

The Erie and Lucky Boy, in Erie camp, Nelson Mining division, each made a small shipment of ore lately.

It is reported that an 8-in. vein of rich silver ore has been found lately in the Mountain Con mine, a few miles from Cody, Slocan.

Coast and Island Mining

Marked Activity in Mines of Coast Districts—Portland
Canal Ores Win Many Prizes at Prince Rupert Fair
—Oil Investigations Among Islands of the Coast—
Northern Camps Busy—General News of the Mines

VANCOUVER ISLAND.

At the Coal Mines.

There is little change in the position at the mines of the Canadian Collieries (Dunsmuir) Ltd. The production at the company's Cumberland mines, Comox colliery, for the month of October was 51,296 tons or 1,900 tons a day for 27 working days, as compared with 52,187 tons or 2,007 tons a day for 26 working days in September. At the company's Extension colliery mines production continues to be between 200 and 300 tons a day, haulage facilities for a larger output still being unavailable.

The Pacific Coast Coal Mines, Ltd., operating at South Wellington, is arranging to increase its output from 200 to 300 tons a day. All coal being mined comes from No. 2 mine. Conditions in No. 1 mine since the miners stopped work six months ago became unfavorable for production, but a dozen men have lately been employed in putting the mine in shape to allow of an early resumption of coal mining in it.

There is no change at either the Jingle Pot mine nor the Western Fuel Co.'s No. 1 mine, Nanaimo, except a slight improvement at the latter. There is a growing feeling that more men will return to work soon and production will be increased accordingly.

Copper Claims Near Quatsino.

A recent press despatch from Spokane, Washington, follows:

"A most important mining deal has been closed here by Conrad Wolfe and F. R. Wolfe, who have disposed of three groups of copper claims, the Old Sport, Shamrock and Idaho, in the Quatsino district on Vancouver island, for \$500,000. The properties were taken over by M. W. Bacon of Butte, Mont., and his New York associates. Mr. Bacon is general manager of the Stewart Mining Company, operating the Stewart mine in the Coeur d'Alene district, Idaho.

"The Old Sport, Shamrock and Idaho groups are regarded as promising copper properties. The ore runs high in copper in addition to gold and silver. A water-power site, which, it is estimated, will develop not less than 3,000 h.p., is included in the purchase.

"Diamond drills for a thorough exploration of the acquired claims have been ordered by Mr. Bacon and part of the equipment is in transit now. Surveyors are employed already running a line for a railway from the claims to Port McNeill at the tide water on the eastern end of Vancouver island,

26 miles distant, and it is stated construction will begin as soon as the survey is completed."

BELLA COOLA.

Under the heading "Possibly Rich Gold Fields Close Home," the Bella Coola "Courier" has published the following information:

"Several local prospectors have returned from the new gold strike on the Skowquiltz river, a tributary of Dean channel, all being enthusiastic regarding the prospects of there being in the near future a prosperous mining camp in that vicinity.

"The first news of gold on the Skowquiltz river was brought to Bella Coola by the Hendricks Bros., who are old-time prospectors and hunters on this northern coast.

"The rich dirt which they brought with them and the description of the lay of the land, soon attracted the attention of other local prospectors, with the result that a large party quickly went to the scene of the find, well equipped to make a preliminary prospect of the country.

"According to accounts received the scene of the discovery lies at the head of the Skowquiltz river some 20 miles from tide-water. The old river bed at this point is very wide and there is a considerable area of gold-bearing gravel beside extensive benches which in all probability will prove rich.

"Twenty-three claims have already been staked, but there still remains much ground that should provide excellent prospects for the many who are expected to visit the place in the spring.

"Already American capitalists have secured all the land on tide-water at the river mouth, and arrangements are being made for building a wharf and a general store, and bringing in the most approved hydraulic appliances, when mining work will be commenced at once.

"The proximity of the scene of the strike to salt water, and the fact that it is easily accessible, should commend it to those prospectors who are willing to take the chance and go and see for themselves.

"Several old Yukon miners are among those already interested and when these soughs become enthusiastic there is generally some very good reason for it."

Sibolla Creek.

The Bella Coola "Courier" has added the following to the various stories concerning Sibolla creek that have been made public:

"Recent reports from the Sibolla creek gold strike add nothing to the general information already made public regarding the richness of the gold field, and until the party of prospectors at present engaged in sinking a shaft on claim No. 8, below Discovery, strike bedrock, and incidentally pay-dirt, the situation will remain unchanged.

"With the opening of spring next year, there is certain to be a rush into the district, thorough prospecting will be undertaken, and there is little doubt that the true extent and wealth of the district will be fairly determined before the close of the season.

"Preparation will be made at Bella Coola for the complete outfitting of parties bound for the diggings as it is certain that the advantages of this route will be apparent to many of those who desire to take in complete outfits with the least hardship to themselves or their horses.

"It is probable that the recent discovery of gold on Sibolla creek is after all but another case of a lost mine being refound after having been completely forgotten.

"About 35 years ago a lone prospector, a Frenchman, who had spent a considerable time in the Tahtsa Lake country, paid a visit to his home in Montreal. Having in his possession considerable gold and a rough map of the country, defining a spot where he asserted he had obtained excellent prospects of rich placer gold, he naturally endeavored to turn his knowledge to advantage. His story seemed so authentic that, while he himself was paid a considerable sum for his information, which money afforded him a trip to his native land, a party was at once equipped and sent to locate the rich fields as described on the chart, being backed, it is so stated, by some wealthy people connected with one of the leading Canadian banks. This party was unsuccessful in its efforts to locate this certain creek, and some time later a second party was despatched with no better result, since which time up to the present the country has been very little prospected.

"Whether or not it was on Sibolla creek that this Frenchman discovered his gold, and if so, whether the ground is as rich as to warrant the enthusiasm raised in certain Montreal circles by the reports and gold produced by this early pioneer, remains to be seen."

Another story is that told by Mr. F. B. Chettleburgh, to the "Daily Colonist," Victoria, which printed the following:

"That there is actual foundation for some of the reports issued recently re-

garding the Telkwa gold strike is vouchsafed by F. B. Chettleburgh, a mining man who has been in the district for several years and who has just come to Victoria to transact other business. Mr. Chettleburgh admits, however, that while he believes in the strike there have been some gross exaggerations of its value and extent. He himself has a claim in the new field and is waiting the latest reports before he takes action concerning its sale.

"The gold strike" he said, "was made on Sibolla creek, more than 100 miles distant from Telkwa, and there was quite a rush to the spot, although it was nothing like the description it received in some of the newspapers. Placer gold was found all right, and the belief spread that a great field had been discovered. Experts have been on the ground during the past few weeks, and capital has been interested in Pittsburg and elsewhere, and I understand that the development of the properties depends upon the reports issued by the experts."

"Mr. Chettleburgh looks after coal mining property in the Telkwa and he believes that with proper development there is a great future for that section of the province."

Hazelton District.

The following news of mining properties, etc., in Hazelton district has been taken from local newspapers, chiefly from the "Omineca Miner":

The latest reports from the Harris mines on Nine-mile mountain, is that the owners are still taking out ore for this winter's shipment. They are making great headway and will be ready to ship as soon as the snow comes and the road is in shape.

As a result of the recent exhibition at Prince Rupert and the excellent display of ore made by the New Hazelton District Mine Owners' Association, the Prince Rupert people wired to the prescriptive Mine Owners' Association, the exhibit be left there permanently. The association had previously decided to have the ore brought back to New Hazelton, as it is desirable to have a big and representative exhibit in the town. Prince Rupert was, however, notified that at some future date an exhibit would be prepared and sent to them.

Glen Mountain.

In the north drift, on the 250-ft. level of the Silver Standard mine, the same shoot of ore as that on the 100-ft. level has been encountered. For the next few weeks practically the entire force will be employed in taking out ore, and as soon as the snow shall come shipment of ore will be commenced. The property is reported to have now reached the stage of being able to finance itself. The owners will ship not less than 600 tons of high-grade ore this winter. Fifty tons of ore extracted from the No. 3 vein will net more than \$200 a ton. The remainder will run considerably more than \$100 a ton.

Road Supt. Carr started a gang of men to work lately to cut the right-of-

way for the new road to the Silver Standard mine. Another gang of graders has been put on, and the work is being rushed as fast as possible. The superintendent has fears, however, that the money will become exhausted before the work is completed, and in that case, unless more funds are forthcoming, the road will be of no use this winter. Steps will no doubt be taken by the parties most interested to see that the money does not run out, as this is one of the most important pieces of work that has been undertaken this year in any part of the district.

Hudson Bay Mountain.

A special train arrived at Hazelton on Sept. 29 with three wealthy mining men on board. It stopped long enough for Col. R. G. Steele to get on board, and then went on to Lake Kathlyn, which is to be the headquarters for the Hudson Bay Mountain Mining Co. and all other properties on that side of the mountain. Col. Steele informed the "Herald" that his visitors were Alfred Oppenheim, H. G. Latilla and H. H. Johnson, a mining engineer who is travelling with Mr. Latilla. They are from London, Eng., and came out expressly to look over the Hudson Bay Mining Co.'s property, which is now in good shape for visitors as a result of the past season's work. One of the new workings is on No. 5 vein, on which a drift is being run, and which is now in about 60 ft. As progress is made the ledge is widening. The ore is high-grade galena. Ernest Levy, of the Le Roi No. 2, Ltd., Rossland, consulting engineer, had been deputed by Col. Steele's company to examine the property and make a report. Mr. Levy has been on the Hudson Bay mountain more than a week and has practically completed his work.

Mr. Steele informed the "Herald" that he has finally reached a settlement with the original owners, has had the surveys made and is ready for the Crown grant. As soon as the grant is issued the owners will get full payment for their property and then the new company will be in shape to proceed with the development that is planned. The work will not be carried on this winter as the season is too late to undertake it, but early in the spring a compressor plant will be installed with drills and other requisites, and a contract awarded for a 600-ft. tunnel to crosscut all five veins. It will give a depth of 1000 ft. Upon the completion of that work a site for a permanent working tunnel on one of the veins will be selected, and a drift be run the entire length of the property. It is expected that that work will be well on toward completion by this time next season. Surveys have been completed and the grade marked out for a tramway from the mine to Chicken lake. Things are now shaping in a manner that should bring about the early realization of Mr. Steele's prediction of several years ago, viz., that he would have one of the biggest mining properties in British Columbia. Upon receipt of the Crown grant he will leave for England for the winter and will return in the spring.

Kitsequekla.

The Kitsequekla coal field, near Skeena crossing, is to be developed at once and B. R. Jones, one of the owners of a group of four coal claims two miles from the railway, asserts that he will ship the first straight carload of coal from the Omineca district to Prince Rupert before Christmas. Mr. Jones and his associates already have started to develop one of their claims with a tunnel, a contract to drive which 100 ft. has been let. Where this tunnel starts there shows a width of more than two feet of high-grade bituminous coal. Wm. McDonald, owner with J. W. Hart of Vancouver, of a large area of coal lands on the Kitsequekla, 12 miles from the railway at Skeena crossing, arrived there recently accompanied by T. J. Vaughn-Rhys, a coal expert and mining engineer representing Alvo von Alvensleben of Vancouver, who was to spend 10 days or more in making a thorough examination of the McDonald-Hart holdings.

Rocher Debole Mountain.

At the Highland Boy group the work on the tunnels is progressing satisfactorily. A big shoot of ore has been encountered. The Highland Boy will be shipping ore to the smelter this winter, as soon as the snow comes and a road can be made.

R. P. Trimble, Portland, Ore., owner of the Great Ohio group on Rocher Debole mountain, has returned to the district to look after his interests and see the tunnel work well started for the winter. Geo. Jennings has his contract well under way.

Oscar Wallace, a pioneer of many mining camps and the original promoter and manager for seven years of the Interstate mine near Wallace, Idaho, has bonded the Rocher Debole Wonder group of 17 claims for \$25,000. A substantial cash payment has been made and work will be started on the property with six men employed. The Wonder group, which also includes the Black Prince, on the east slope of the Rocher Debole mountain at the head of Mud creek, was owned by Barney Halloran, I. W. Thompson and Robert Hadden, who located part of the property two years ago and purchased the rest from others who located around them at the same time. Five known ledges traverse the property and on all of them more or less prospecting and development work has been done. Four show high-grade copper ore. Most of the work to date has been done on the Black Prince and Wonder claims, and the best showing is probably on the latter at the summit of the mountain where a cross vein cuts it. For a distance of 500 ft. there is a strong gossan averaging 4 ft. 6 in. in width. One opening on the Black Prince shows 3 ft. of chalcopryite in a 4-ft. ledge. "My first work," said Mr. Wallace, "will be to complete the trail to the site of my new camp, a distance of about a mile, and the erection of buildings to house the working force this winter. I shall drive a tunnel on the No. 3 vein to open it under a fine outcrop of chalcopryite. I feel confident that by spring I shall have a showing good enough to justify

the development of the mine by a permanent working tunnel at considerable depth."

BABINE LAKE

The Omineca "Miner," Hazelton, has published the following summary concerning the Babine Lake district, Omineca mining division:

"The season's mining operations in the Babine Lake district have demonstrated that claims in that vicinity are well worthy of attention. Returning from the Copper Island group, on which they have been working, H. J. and A. N. Macdonald report that claim-owners have accomplished a great deal of work, with excellent results. On Copper Island the owners have built a camp to accommodate a crew of miners who will be employed in developing the large body of low-grade copper ore which has been uncovered.

"George E. Neilson is expected to arrive shortly, to arrange for the development of the Silver Island group, on which there is a showing of high-grade ore. Work on this property may be continued all through the winter.

"On Charles Newman's property, a great deal of miner-like work has been done, a fine showing of ore being the result.

"On Anderson creek, C. A. Anderson has a well mineralized group, with several good showings, one vein containing 4 ft. of steel galena ore. On the same creek Johnson and partner have found a ledge, reported to be 15 ft. wide and to contain silver and gold.

"Opposite Silver Island, Mercer, O'Connor and Dodson have uncovered what Mr. Macdonald describes as the biggest quartz vein he has ever seen. Assays up to \$19 a ton have been obtained. Samples of rock are now being tested.

"John McPherson has a nice-looking galena vein on his Copper Island claim. Fine specimens from various properties on this island were sent to the Prince Rupert Exhibition."

OMINECA.

Quartz Creek.

Mr. R. D. Featherstonhaugh has returned from a visit of inspection of the workings of the Omineca Gold Mines, Ltd., on what is known as Quartz creek. He is of the opinion that the old channel has been discovered, and that Omineca is on the eve of coming into its own. This condition, he says, will be hastened when the transportation facilities now rapidly nearing completion are an accomplished fact. Mr. Featherstonhaugh is also authority for the statement that trains will be running into North Vancouver via the Grand Trunk Pacific and over the Pacific Great Eastern, before they will be running into Prince Rupert from Fort George.

Manson.

In the Manson gold camp larger mining operations have been discontinued for the season, says the "Omineca Miner." All the miners who have returned from that district report

highly encouraging developments as a result of the summer's work. Interest naturally centres on the operations of the Kildare Co., on Slate creek, where Geo. W. Otterson, the company's general manager, has had a crew engaged in modernizing the equipment and preparing for mining the eight miles of placer leases held by the company, which is composed of Ottawa capitalists. Interviewed by the "Miner," Mr. Otterson said that the season's work had confirmed his previous high opinion of the district. Speaking of the Kildare Co.'s operations, he stated that everything about the property had been put in excellent condition for productive work as soon as water shall be available next spring. By additions to the plant and improvements effected the labor cost of mining has been reduced one-half—an important consideration even with ground as rich as that held by the Kildare Co.

Starting early in the season, Mr. Otterson has practically rebuilt five miles of ditch and flume on Manson and Slate creeks. The flume, which is 6 ft. wide and 3 ft. deep, is now delivering 1,000 inches of water, and can easily carry double that quantity if required. A pit 200 ft. long, 75 ft. wide, and 40 ft. deep was excavated, but it was impossible to clean up the bottom, as the old elevator, which had been in service for more than 14 years, went to pieces. The new machinery not arriving in time, it was decided to shut down for the winter. Mr. Otterson estimates that there is between \$75,000 and \$80,000 worth of gold which can be taken out as soon as the new machinery shall be installed. Part of the equipment is already on the ground, while the heavier pieces are at South Hazelton, and will be taken in by toboggan during the winter. The power of the plant may be judged from the nozzle pressure, which is 93 lb. to the square inch. The pipe line, which is 1,300 ft. long, has a diameter of 24 in.

Boulders will be handled by a tramway—operated by one man—which has a capacity of 300 tons in 10 hours. Its cable covers 600 ft. of ground, and the tramway can be moved across the pit in half an hour. It took three days to move the derrick formerly used, and it covers only 80 ft.

The new elevator which is being installed is of 14 in. diameter, capable of handling 5,000 yd. of ground per day. What is known as an open lift will also be installed. This will deliver boulders 14 by 18 in. to a height of 35 ft. without handling.

The company has also installed a compressor and complete drilling outfit. The pit and the entire camp are lighted by electricity, and there is a sawmill, which will be in operation next season. The camp consists of cookhouse, warehouse, bunkhouse, icehouse, blacksmith shop, toolhouse, office and other buildings.

The work done shows that, while the best pay is on bedrock, the ground contains gold all through. The largest piece taken out this season, \$7.75, was found 4 ft. from the surface.

The Kildare Co. is taking by toboggan 11,000 lbs. of supplies from Hazelton to Manson creek.

Groundhog Coalfield.

The "Miner," Hazelton, says:

"The effect of the season's development work in the Groundhog district has been to fully confirm my faith in the field," said Amos Godfrey, who has charge of the field operations of the B. C. Anthracite, Ltd., a Vancouver corporation with large holdings in the upper Skeena field. On the company's property the season's work has disclosed a new seam containing 7 ft. of good coal, and another with 4 ft. 6 in. of excellent clean coal, Mr. Godfrey says. He is taking samples of the coal with him to Vancouver. The extension of the company's long tunnels has shown, so he says, that the coal becomes cleaner as the depth is gained. While more work is required on the Groundhog trail, Mr. Godfrey stated, the work done this season had greatly improved it. He found it very much better on his return than when he went in last spring.

OBSERVATORY INLET.

Anyox.

In its issue of October 25, "Mining and Scientific Press" says: "Employees of large mining companies should have every facility given them to live in comfortable homes, especially if the properties are in outlying districts. The Granby Consolidated Co., which is developing a large copper mine and erecting a smelter at Anyox, Observatory inlet, British Columbia, is evidently determined to treat its men well, and is erecting cottages for them. The rental is \$3 per month per room, with electric light, bath in every house, even with two rooms. At the mine there are fourteen 4-room and four 5-room cottages completed. The old bunkhouse has been renovated and will house 35 men. A 2-storey bunkhouse, 30 by 120 ft., with basement containing lockers, showers, and tubs, is ready for 110 men. The mess has a capacity of 250 men, with cold storage plant. All buildings are connected with water and sewer systems sufficient for present and future needs."

The Phoenix "Pioneer" said on Oct. 4: "J. E. Thompson, of the local firm of Morrin, Thompson Co., who has been making a tour of the British Columbia coast line, travelling as far north as Granby bay, returned to town the latter part of last week.

"Speaking of the prospects of the districts visited, he stated that it is well-nigh impossible for an outsider to grasp the full significance of the progress being made throughout the northern hinterland of this province; still less is it possible to forecast the ultimate destiny of those districts. In other words it must be seen to be adequately realized. The traveller was, in this instance, not content, as many are, with the straight point to point trip from Vancouver to Prince Rupert. On the contrary he visited every place on the coast line that had in it the germs of a prospective future. But of all the places stopped at, none impressed the traveller or excited keener interest than his few days' stay at the Hidden creek mine, as the guest of the Granby Co.'s

superintendent of mines, Mr. O. B. Smith. 'I never saw such a place,' said Mr. Thompson. 'The progress up there is simply wonderful,' and from these and other eulogistic references, our representative was led to believe that half of the truth has not been told of the splendid progress made towards placing that property on a shipping basis. Mr. Thompson is firmly of the opinion that the claim of the officials to blow in the smelter furnaces about the end of January will be made good, and like many others who have visited the scene of operations, he looked upon the advent of the Granby company into the north as an occasion of far-reaching importance for the mining industry up there. Talking of the price with which copper will eventually be produced at Hidden creek, Mr. Thompson ventured to prophecy a surprise in store for the mining community."

PORTLAND CANAL.

Stewart.

On October 14, there was published in Victoria, the following statement:

"The local offices of the Portland Canal Tunnels, Ltd., are advised from the general manager, Mr. W. J. Elmen-dorf that 58 ft. has been made in the last week, a total of 2,203 ft. from the start. He says: 'The ground has been rather shattered for the last few days, and we are following along a line of a little fault plane. On Sunday night one of the muckers found a small piece of ore showing the first really live looking galena we have seen. There is a little seam running almost in line with the tunnel which shows a little ore along it, and is very encouraging, as indicating that we may strike the vein where it is well mineralized. Zinc blende, some galena and a very little chalcopryite (copper pyrites) can be seen in almost any piece of it. An assay on this will be out for the next mail, and I shall be surprised if it does not show a little value.'"

Late in the month advices from the property were to the effect that a distance of more than 2,300 ft. from the portal of the adit had been reached, and that indications appeared to be most favorable to early success in the effort to find ore at the point which has all along been the objective. The adit had

entered similar rock to that occurring near the vein in the workings above, and it was expected that ore would be cut early in November.

Salmon River.

Supplies sufficient to last until next spring have been sent to the camp of the Indian Mines, Ltd., situated in the vicinity of Cascade creek, a tributary of Salmon river, and distant from the head of Portland canal about 14 miles. No. 1 adit is now in about 350 ft.; this being driven to open the ground under an ore deposit 19 ft. wide where a prospect shaft has been sunk in it from the surface at about 160 ft. above the adit. At 100 ft. in, the adit exposed what is thought to be the top of a blind lead; at 200 ft. in a shoot of ore 5 ft. in width was encountered, this being at a depth of 125 ft. from the surface. No. 2 adit is a drift at a vertical depth of 160 ft. below No. 1; it is now in about 60 ft. and has been in ore all the way, running about 3 ft. in width. On the whole, the ore opened is concentrating though there is a fair proportion that could be sorted out for shipment to the smelting works as crude ore. Assays of samples from the blind lead above mentioned gave returns up to \$17 a ton, chiefly in gold; others, from the orebody at 200 ft. in from the portal of No. 1 adit, returned on an average about \$12 in gold and 4 oz. silver a ton. That from the surface opening gave 40 per cent. lead, 20 oz. silver a ton and a little gold.

Queen Charlotte Islands.

The Granby Consolidated Co. is reported to have had its engineers examine the Ikeda mine, on Moresby island, with a view to its purchase.

Mr. F. C. Wright, field superintendent of the Graham Island Coal and Timber Syndicate has returned from a business trip to Prince Rupert. Before leaving Masset for the camp up the river, Mr. Wright stated that operations will be suspended for the winter months and preparations are being made to close down. It is expected that drilling will be resumed in March next, Mr. and Mrs. Wright will remain on the island through winter.

A discovery of coal is reported from Louise island, on the south side of Cumshewa inlet, which separates it from Moresby island. A Japanese,

cruising along the coast, found a seam of coal about 5 ft. in thickness. He reported the matter to Messrs. Jacobs, of Vancouver, and offered to show the locality of his find on condition of receiving an interest. The result was that parties went to examine the find and were so well satisfied with it that they located 26 claims, and have applied for licenses to prospect the discovery.

According to the "Prince Rupert Empire," interest in the coal and oil-drilling operations on Graham island have been much intensified by the discovery of oil in the Yakoun valley, on the property of Messrs. Armstrong & Morrison, where drills have been boring for coal for the last two years. A large pocket of oil was found at a depth of 200 ft., in the new drill hole sunk this year by the Graham Island Coal Co. on this property, about 22 miles from the mouth of the Yakoun river. The oil flooded the core barrel, but was not in sufficient quantity to prevent further drilling, which will be continued for 1,200 ft. more. When this drill hole shall be completed a charge of dynamite will be exploded in the oil-bearing strata to release any other wells in the vicinity. The two drills operated in this section are boring for coal, and gauging the extent and quantity of the coal measures which are known to exist. This work will be continued until the coal area is all mapped and classified. The presence of petroleum was not suspected in this region, though found in other places on Graham island. This last discovery will add great interest to future drilling operations.

A coast newspaper states that some attention is likely to be directed toward working for placer gold the sand on the north beach of Graham island. The chief difficulty that faces the operators is the fine quality of the gold particles, which are much in the nature of the flour or flake variety. Then there are the heavy seas which up to the present have rendered effective work an impossibility. A few years ago, says the report, many pre-emptors and others around Tow hill, with primitive methods demonstrated that the sand was rich in gold, and some of them are alleged to have made fairly good clean-ups.

On October 29, the following account appeared in the "Queen Charlotte Islander": R. R. Hedley, of Vancouver,

The Highest Cash Price Paid for Raw Furs.

Feed Stable in Connection

SKEENA CROSSING ROAD HOUSE AND GENERAL STORE

Prospectors' and Miners' Supplies at Lowest Prices

Saddle and Pack Horses for Hire

B. R. JONES, Proprietor

SKEENA CROSSING, B.C.

has sent in a complete plant for the equipment of the Tassoo mine, which he and his associates have under bond. The plant includes rails, mine cars, tramway and supplies. It is expected to begin shipping to Tacoma smelter at an early date.

The property includes 22 claims and fractions aggregating 350 acres in area. The ore is so favorable for smelting that the Tacoma smelter has entered into a contract to treat it free of cost, so that there are only the mining and transportation charges to take care of. The site of the mine is on a land-locked harbor, with deep water to the shore line, so that the ore can be delivered on shipboard at a minimum cost. There is ample timber and waterpower is available within three miles. The ore is magnetite, containing varying amounts of copper, but there is a width of 28 ft. averaging 3 per cent. copper to furnish shipments for some time. As showing the extent of ore it may be stated that the tunnel, which is 300 ft. long, cuts 130 ft. of magnetite in that direction the ore being in bands of from 10 ft. to 35 ft. in width. The portal of the tunnel is in ore, so that there is a still further width of ore not yet determined. The tunnel gives backs of from 120 to 160 ft., and surface trenching shows ore for a length of 3,000 ft. on the strike. R. W. Thompson, of Vancouver, is superintendent. Bunkers to hold 1,000 tons will be built on the shore so that shipments can be made direct from them to the ship. The present working tunnel is at an elevation of 1,125 ft. above the site of the bunkers. In addition to copper the ore contains about \$1 in gold and half an ounce of silver per ton. It is estimated that when the mine is equipped and in full working order ore will be mined and delivered on shipboard at a cost not exceeding \$1 per ton.

PORTLAND CANAL ORES TAKE FIVE FIRST PRIZES AT PRINCE RUPERT EXHIBITION.

The Portland Canal Miner of the 27th ult., thus records the gratifying results of the Stewart mineral exhibit at Prince Rupert:

Notwithstanding the fact that the Stewart Citizens' Association's entry in the mineral department of the Prince Rupert Exhibition, which closed yesterday, failed to capture the district prize, it nevertheless received the largest number of first class awards over any other section. The judges, Messrs. Alfred C. Garde and Gilbert Burrowes, exercised considerable care in making the awards and the exhibitors were unanimous in their appreciation of the several decisions. The general opinion of the thousands of visitors is that the ore samples displayed at the fair were vastly superior in point of diversity to any other district exhibit, and the individual results speak eloquently of the riches of the Portland Canal Mining Division as against any section of the north. The Stewart exhibit was most tastefully arranged and decorated in the limited area assigned to it. The flags and enlarged views of the town and district supplied by the Portland Canal Miner

added considerably to the attractiveness of the display, and a considerable quantity of illustrated literature was freely distributed to interested visitors. T. J. Vaughan-Rhys, M.E., who went down in charge of the exhibit, was in attendance from the opening to the closing each day and at all times gave detailed descriptions of the various properties represented. There is little doubt that considerable benefit will accrue to the district from being represented by so worthy a display of ores and through the efforts of the representative of the Stewart Citizens' Association it was arranged that the bulk of the exhibit will be permanently housed in a building to be erected at an early date by the joint efforts of the Prince Rupert Board of Trade and the Grand Trunk Pacific Railway. In the meantime the collection will be stored at the city hall through the kindness of the Prince Rupert municipal authorities, who have taken considerable interest in Stewart's efforts. The Miner is now in communication with the Grand Trunk Pacific officials at Winnipeg looking to the forwarding of a special collection of Stewart ores to the Chicago Mid-Winter fair.

The following is the full list of the awards given by the mining department of the exhibition:

Section 1—For the best district exhibit of ores of any kind, from any camp in Northern British Columbia, diploma and \$50, was won by the Hazelton district.

Section 2—Best collection of gold ore, \$5, won by the Atlin display.

Section 3—Best collection of silver ore, \$5, won by the Stewart Citizens' Association with the Silver Tip mine exhibit.

Section 4—Best collection of gold-copper ore, \$5, won by the Stewart Citizens' Association with the Red Cliff mine exhibit.

Section 5—Best collection of silver-lead ore, \$5, won by the Hazelton district with the Silver Standard mine exhibit.

Section 6—Best collection of zinc ore, won by Skeena Crossing with the Brian Boru mine exhibit.

Section 7—Best individual collection of prospectors' specimens. First prize, \$15, won by the Stewart Citizens' Association with George Brugg's exhibit of specimens; second by E. Ubank, \$10. No third entry.

Section 8—Special prize for the largest exhibit of ore from any individual mine or prospect, shown by bona fide owner, donated by the Portland Canal Miner, \$10, won by the Stewart Citizens' Association with the Portland Canal Mining Company's exhibit.

Section 9—Special silver cup, valued at \$25, donated by R. W. Cameron, for the best exhibit of commercial coal, was won by the National Finance Co., Ltd., of Vancouver, with their exhibit from the Copper River.

Section 10—Diploma for the best collection of concentrates, won by the Stewart Citizens' Association with the Portland Canal Mining Company's exhibit.

Section 12—Diploma for the best collection of copper-gold ore samples exhibited by a district, as differentiated from samples submitted by a prospector, won by the exhibit from Moresby Island.

Section 13—Diploma for best collection of building materials—marble, brick, lime, clay, etc., won by the Kitsumkalum exhibit of E. Goodwin.

Section 16—Best collection of limestone, \$5, won by the exhibit from Gurde Island.

Section 18—Best collection of brick, \$5; won by the Kitsumkalum exhibit of A. Goodwin.

Section 19—Best collection of clay, \$5, won by the Lofty Island exhibit of J. G. Johnson.

Section 21—Best collection of gravel, \$5, won by the Skeena River and Portland Canal exhibits of Captain Babington.

Section 23—Best collection of oils, \$5, won by the Graham Island exhibit of W. Macdonald.

Section 24 (special prize)—\$5 for best exhibit of copper-silver ores, won by Hazelton district with exhibit of Frank Martin.

Section 25 (special prize)—\$5 for the best exhibit of copper-gold-silver ores, won by Kitselas district with exhibit of J. D. Wells from the Continental group.

Section 26 (special prize)—\$5 for placer products, won by Graham Island district with exhibit of Parks & Spence.

Commenting on the mineral display arranged by the Stewart Citizens' Association, the Prince Rupert Daily News in yesterday's issue has the following:

For magnificent display of ore the Portland Canal district is to be congratulated, as well as that of an individual prospector, Geo. Brugg, the exhibit is undoubtedly the most comprehensive showing of ores of that district that has ever been made.

Of unusual interest is that of the Portland Canal Mining Company, which shows the run of the mine and samples representing the result of concentration at the company's mill. To mining men these results are of great technical interest because of the excellent character of the concentrates produced from the Overstrom and Wilfley tables, better than which could not be found in any part of the world.

The Salmon-Bear River Mining Company has an exhibit showing lead carbonates and lead sulphurates. The Indian Mines, Limited, exhibits a very fine quality of silver-lead ores, and among other companies representing that district are the Stewart Mines, the Glacier Creek, the Red Cliff and the Big Missouri. Sir Donald Mann shows samples of ore from the Ben Bolt and Northern Terminus mines.

Among the high grade ores from there are samples from the Columbia Evening Star running \$300 to the ton; the Montana group, running \$950, and the Pontiac to the value of \$1,047 the ton. Nesbitt and Archie have a good collection of antimonial lead ore which

THE FLATHEAD VALLEY DISTRICT.

For months the eyes of the oil world have been eagerly watching the Flathead District, and recent authentic reports from that region stamp it a natural oil field that will show most wonderful returns.

The presence of oil shales and oil at the surface over an area extending seventy miles from east to west and twelve to fourteen miles from north to south in the Flathead Valley justifies the great things expected of the section in the very near future.

The real development work of the Flathead District has been done by the British Columbia Oil and Coal Development Company, Ltd., whose operations have reached the last stage, and it now seems certain that oil will very soon be struck in a deep well. This company shows great activity, and their plan is to develop the property to an advanced stage by the time the railroad reaches the district.

The company, at considerable expense, has taken into the property an up-to-date standard rig which is capable of drilling to a depth of 4500 feet. Some considerable drilling has been done at a location where they are sinking their deep wells.

The contractors have just taken in another 1,000-foot Keystone drill, and work has been commenced on the four sites located by William Blakemore, a geologist of note and authority who recently visited the property and made a report on the same, saying that "it is impossible that such widespread evidences of oil should exist except in a well defined oil district; that there is also abundance of evidence to justify the designation of the Sage Creek and Flathead Valleys as an oil district," and that after carefully considering all the data rendered available by his inspection of the British Columbia Oil and Coal Development Company's property, he arrived at the following conclusions:

"That your property on Sage Creek is in the most favorable position in a well defined oil-bearing district.

"That the evidences justify the conclusion that oil in large quantities, by which I mean commercial quantities, either still exists or has existed within the area defined.

"That the strength and persistency of the seepage favors the view that it still exists in commercial quantities.

"That there are no physical or geological difficulties in the way of

making such proof; and it is only the question of expenditure rightly directed.

"That the work you have already done has distinctly advanced your knowledge of general conditions, and has not only rendered these conditions more reliable but has pointed the way for a certain solution of the problem."

The possibilities of the Flathead District have caused columns of comment over Canada and the United States. The *Spokesman Review* of Spokane, Washington, in a recent issue contains the following:

"An oil exchange, similar to those maintained in the financial centres adjacent to the Eastern and Southern oil fields, is planned for Spokane if the oil discoveries in the Sage Creek region in British Columbia, near the International Boundary line between Montana and the Canadian Provinces, develop as is predicted they will by oil experts from all over the continent who have examined them in the last few months. Local men, among them Walter J. Nicholls, bond, investment and mining broker, are keeping closely in touch with the situation, prepared to organize an exchange so soon as they are convinced that conditions justify it.

"The Sage Creek fields, in close proximity to large land holdings, regarded as promising oil districts, owned by D. C. Corbin, of Spokane, and the Chicago, Milwaukee and St. Paul Railway Company, are controlled by the British Columbia Oil and Coal Development Company, a corporation financed by Sir Charles Tupper and his associates, capitalized for 8,000 shares at \$50, par value. Several Spokane capitalists are stockholders in the Company, and it is estimated that approximately \$50,000 of local capital has been invested in the enterprise in the last three months.

"The officers of the company are: E. C. B. Bagshawe, President; M. H. Cowley, Vice-President; A. T. Abbey, Secretary-Treasurer; Anthony Anderson, General Manager; W. H. Carsley, Auditor, and W. H. R. Moore, Chief Counsel. All are residents of Victoria. The directors, in addition to Messrs. Bagshawe, Carsley and Anderson, are: W. Mulholland and G. T. Gould, Vancouver, B. C.; O. A. Benson, Kamloops, B. C.; W. A. Greer, Oxbow, Saskatchewan, and Dr. W. E. Tweed, Killarney, Manitoba. The consulting engineers are E. C. Edwards Leckie and G. H. Kirkpatrick, Vancouver, and the contractor in charge of the development is George W. Snyder of Corbin, B. C., an experienced well-driller from the Pennsylvania oil fields.

SAMPLES BROUGHT HERE.

"J. O. Stewart, manager of the Diamond Rubber Company, and M. C. Couch, an Eastern oil expert, who also is financially interested in the

Development Company, returned Sunday from Sage Creek, bringing with them several gallons of oil taken from the surface of a seepage pool in which it had collected. The sample has not been rectified, yet it carries so high a percentage of illuminating properties that an ordinary kerosene lamp filled with it, which was on exhibition yesterday at the Spokane Stock Exchange, burned as brightly as if charged with the best oil on the market.

"I have inspected most of the Californian oil fields, and I regard the prospects in Sage Creek as more promising than any district I ever visited," said Mr. Stewart yesterday. "The natural formation of the region is ideally adapted to the collecting of oil in immense subterranean reservoirs, and I feel confident that development now under way will result in the opening of commercial wells.

"The oil has a paraffin base, and analysis shows 71 per cent. naphtha, gasoline and kerosene, 18 per cent. lubricants and 11 per cent. paraffin residue, suitable for a number of by-products.

"William Blakemore of Victoria, B. C., consulting engineer and geologist, visited the district several months ago and selected sites for the wells, one of which is already down 550 feet, but operations have been suspended there awaiting the arrival from the East of casing. The well is 12-inch bore for 300 feet and 10 inches the rest of the way. Bedrock has not been encountered and we will continue the 10-inch bore until it is reached.

TO SINK SIX WELLS.

"Equipment for another drilling outfit was on the ground when we left and should be assembled and ready to operate now. This will be put in commission sinking six wells in a mile radius of the main seepage, from which the samples we brought were taken, and the work will be continued during the winter, quarters for the men being prepared while we were there. These wells will be eight inches in diameter and will be sunk to bedrock.

"Dr. G. M. Dawson of Ottawa, Canada, Dominion Geological Surveyor, who made an exhaustive examination of the region, reported that the indications were sufficiently promising to warrant extensive development, and I. E. Segur of San Francisco, formerly a partner in the oil fields in California with Rudolph Spreckels, who also was there about a year ago, stated that he regarded the surface oil as equal to the best in Pennsylvania, and predicted that a good flow would be obtained within reasonable depth. He characterized the field as the most promising he knew of anywhere.

"D. C. Corbin has agreed to extend his railway line from Corbin south through the district to connect with the Chicago, Milwaukee and St. Paul near the International Boundary, 45 miles, as soon as oil in commercial quantities is secured, and the Milwaukee Company is planning to invade the region also."

give silver values averaging \$60 per ton.

The Stewart Citizens' Association have shown considerable enterprise in gathering such a splendidly representative collection of the mineral resources of their district.

NORTH PENDER AND MAYNE ISLANDS REPORTED AS PROBABLY CONTAINING VAST DEPOSITS OF PETROLEUM.

Considerable interest is aroused in recent developments on North Pender and Mayne islands, which hold substantial promise of a mighty oil field being born to the Dominion of Canada.

Oil fuel for the navy is now receiving the earnest attention of the British government, and the trend of public opinion is strongly in favor of equipping war vessels with the equipment necessary, its advantages on the score of economy, convenience and cleanliness being widely recognized.

The ground in this vicinity is covered with oil leases, the developments giving rise to this activity being reports of local residents, who, at various times, have noted the sea at different sections covered with petroleum. George Gorge-son in July, 1913, reported that petroleum was observed by him some ten or eleven years ago, and again in May, 1913, Daniel Tom, a fisherman of Mayne Island, B. C., states that in April of this year petroleum completely covered the waters of Active Pass, and also reports that some ten years ago the oil was so thickly distributed that fishing lines and boats got very dirty and greasy with it. George A. Watson, lighthouse-keeper of Portlock Point lighthouse, Prevost Island, B. C., confirms Mr. Tom's statement, declaring that in the spring of 1913 a large quantity of petroleum was afloat on the waters of Active Pass. He endeavored to trace its source, and stated that it appeared to seep out of a fissure of the rocks near to Helen Point on Mayne Island. A similar phenomenon was reported in the Geological Survey Report on Texas Oil Fields, in 1903, by Messrs. Hayes and Kennedy, who stated that: "the authors have seen vast quantities of oil, periodically ejected, covering the sea for miles off the coast of Texas." The great oil fields of Texas are, of course, now commercial history, and it would be fortunate indeed if the same analogy held good for North Pender and Mayne Islands, these being but 41 miles from Vancouver and Victoria, accessible to ocean vessels, and with a deep water harbor capable of safely harboring a fleet of war vessels.

With a view to developing to the full any potential oil resources of Canada, and stimulating discovery in that direction, the government at Ottawa, by special Act of Parliament, has authorized a bounty or subsidy of 1½ cents per gallon on all oil taken from borings in Canada.

Dr. Charles E. Weaver, who in 1906 was commissioned by the United States Government, associated with Dr. G. C. Martin, to report on petroleum conditions in the Behring River (Alaska)

field, has examined the property and regards the conditions as exceptionally good for the accumulation of oil deposits. Mr. F. L. King, an oil expert by profession, and associated in the past with many oil companies, including the Vacuum Oil Company of Rochester, a subsidiary company of Standard Oil, states that he concurs fully in the conclusion arrived at by Dr. Weaver. Men in a position to know have taken time by the forelock and covered ground in the immediate vicinity with oil leases, and, generally, it looks as if Canada is witnessing the birth of what might well prove to be a great oil industry.

The Vancouver Island Oil Company, Ltd., has been incorporated under B. C. Charter to handle this undertaking. A temporary board of business men in Victoria is now handling the affairs of the company, pending the appointment of a permanent board.

Some of the most prominent men in the province have the matter under advisement at the present time, and they will constitute a permanent board at a very near date.

From indications reported from many points throughout the Northwest, in Calgary clear down to the Coast, there is every reason to believe that larger deposits of oil will be discovered here than have ever yet been discovered.

The remarkable thing about the Pender Island oil field is that it has not come to the notice of practical oil men prior to this date.

Oil has been known to flow around these islands for the past twenty years, so this does away with all talk of it having been dropped overboard from oil steamers as there was no oil steamers up here in those days.

The formation is cretaceous, which is the formation connected with every noted current of oil in Western Canada. The tar sands of Alberta are cretaceous and occupy an area of nearly one thousand square miles.

Natural gas has been reported a number of times from the islands. Mr. Blakemore, the well known mining engineer, in his reports in the 1909 reports of the Minister of Mines on Tumbo Island borings, stated that gas threw water out of the boring holes 25 ft. in the air and, when ignited, burned steadily. Gas is now flowing on Pender and Mayne Islands.

Mr. Fred L. King, the practical oil man, with 40 years' experience, informs us that the formation is identical with the famous Santa Maria fields in California.

Taking evidence from residents, practical oil men and geologists on the following factors, perfect anticlinal formation, natural gas and high pressure being there, and the currents of oil throughout the district, there is every reason to believe not only that oil will be brought in, but when it does come it will be a gusher.

The Inter-British Securities, Ltd., at 508 Belmont House, Victoria, B. C., have published a book giving the reports as they were written verbatim, and this may be obtained by request at any time.

ELK MOUNTAIN MINING PROPERTIES.

(Written for B. C. Mining Exchange by W. M. Halliday)

In the July number of last year there was an article on the Elk Mountain mining properties, and probably a number of your readers may be interested in the advance that has been made in this section of Vancouver Island.

Assessment work was completed on the whole aggregation of claims before the beginning of winter. In the spring of this year another assessment was done of the eight claims of the "Old Sport" group and the "Merry Widow" group.

In July the whole aggregation of claims was put under bond to Messrs. C. Wolfe, manager of the United Copper Mining Co., of Spokane, and F. R. Wolfe, his brother, manager of the Florence Mine, near Ainsworth. Liberal terms were given on the option and the work has been actively prosecuted on the claims and on the trails ever since. The bonders are operating under the name of the Copper Mountain Mining Co., but as up to the present no shares have been issued and only a few private individuals are working together they have not as yet incorporated.

The trail from the South East Arm of Quatsino Sound has been very much improved and shortened and up to the present all supplies have gone in over this trail having been packed on men's backs. It is, however, intended to cut a trail from Port McNeill on the east coast to the properties and also to bring out the ore to the same point as it could be transported from there to the smelter on scows instead of ocean going vessels as would be necessary if it went by way of Quatsino Sound. The distances are practically the same being 17 miles by Quatsino Sound and 19 miles to Port McNeill. A crew of men are working at present on the trail to Port McNeill.

On the properties themselves considerable work has been done with very encouraging results.

The work here is in charge of Mr. R. H. Hewer who has been mine superintendent for the United Copper Mining Co. at their mine at Chewelah, Wash. On the "Old Sport" lead a great deal of surface work has been done and it has been definitely proved that the lead is continuous for at least 2,800 feet with an outcrop width varying from 12 to 69 feet. Numerous places have been stripped and a row of holes drilled and blasted to show the nature of the surface ore. It is all practically chalcopryite with a magnetic iron base and varying in values from two per cent. to thirty per cent. in copper with about two dollars in gold and silver. A tunnel was commenced by the claim holders which would run into the ore at about 20 feet. This tunnel has been continued and is now at the last report 28 feet in the ore which it is cross-cutting. The footwall is diorite of a very fine, hard, close texture, between this and the ore is a mixed vein of epidote, garnetite and more or less diorite about 4 feet thick. This carries values itself both in gold and copper. The footwall

in the tunnel is well defined and dips at an angle of 42 degrees. There is apparently little difference in the quality of the ore in the tunnel after once getting through the vein of mixed rock.

Until recently it was thought that the ore body was a contact deposit between diorite and lime, but recent investigations tend to show that the vein is a true fissure as in two places above the ore vein deposits of diorite have been found.

The operating company have ordered a diamond drill to be operated by a Pelton water wheel which is probably on its way to the properties at present. The intention is to bore a series of holes in the "Old Sport" vein as soon as possible and then move the drill to the "Merry Widow" group which lies further south and up the hill about 1,000 feet. New bunk houses have been built and a permanent camp has been established.

It has been intended by the Copper Mountain Mining Co. to get assistance from outside capital.

During the summer the owners of the claims performed another assessment on the "Merry Widow" group. This consisted of tunnel work with a little stripping on the surface. This group carries good values in gold in addition to about 2 per cent. in copper values. In one place a pocket of arsenical pyrites was found which gave assay values of about \$180 in gold. Owing to the formation of the country this group can be prospected much better by a diamond drill than by any other process as the ore body lies in a large flat which is wet, having the surface drainage from the hills on both sides. If the values prove sufficiently interesting after thorough prospecting, it is the intention to run a tunnel from the steep hillside below the ore bodies, but as the distance is too great to warrant doing prospecting work by means of a tunnel, this will be left until the reports have been received from the diamond drill.

The magnetic iron gangue in all these ores is very hard to drill by hand and a machine drill has been ordered which will be operated by compressed air generated by a water wheel. As mentioned in the last article there is a splendid water power within easy reach of the properties which can easily be made available. A conservative estimate of the power from the falls in the Raging River gives an available horse power of about 1,500, which should be ample not only to operate the properties but also to electrify the tramway to the coast at Port McNeill.

It is quite within the bounds of probability that these properties will be large producers within the next current year and the tramway could be used for taking out timber from the large belt which will necessarily be crossed no matter which way the ore comes out.

In addition to the "Old Sport" and "Merry Widow" groups, Messrs. Wolfe have secured an option on the Shamrock, Idaho and Bluebird groups, but up to the present very little work has been done on them.

VANCOUVER ISLAND STRIKERS RECEIVE EXEMPLARY SENTENCES.

A Nanaimo despatch of the 23rd inst. says: In the county court this morning his honor, Judge Howay passed sentence on the men found guilty of participating in the labor disturbances at Ladysmith in August 13, 14 and 15, which resulted in considerable destruction to property. Three men and two boys were sentenced to serve two years in the penitentiary. Twenty-three were given imprisonment for one year, and were fined \$100 each, and eleven were sent to jail for three months, and will have to pay a fine of \$50 each.

All sentences date from the time of arrest. This means that those sentenced to serve three months will be liberated in about thirty days' time.

Those sentenced to serve two years were: J. J. Taylor, vice-president of the B. C. Federation of Labor and vice-president of the Ladysmith local of the U. M. W. of A.; Samuel Guthrie, president of the Ladysmith union; Paul Deconink, a leader amongst the Belgians in the coal mining district, and two boys, John Morgan, son of a prominent mine foreman, who was also given a jail term, and William Simpson, jr., son of a mine contractor.

One year in jail with a fine of \$100 was imposed upon John Allcopp, J. H. Armstrong, Charles Axelson, ex-Ald. William Bauld, George Bombera, Sam Brightman, James Colley, Robert Cossar, Peter Galuska, H. H. Langdon, Duncan McKenzie, secretary of the Ladysmith union; Joseph Mairs, jr., James Marshall, Charles Mortimer, Steve Mrus, Steve Puyanich, George Portery, William Stackhouse, formerly a lieutenant in the United States army, and a prominent business man of Ladysmith; Martin Slogan, James Wallace, Robert Walkinshaw and Charles Yoga.

Henry Dyer, John Fisher, Ernest James, Alvar Kotilla, Richard Morgan, a candidate for the mayoralty at Ladysmith this year; William Patterson, William Sterling, John Scott, Henry Taylor, Richard Whisker and Edward Williams, were sentenced to serve three months and pay a fine of \$50.

Prior to sentences being meted out to the Ladysmith men, Judge Howay found George Pettigrew and Walter Nelson guilty of intimidating John Weeks, an employee of the Western Fuel Company, and sentenced them to two months' jail sentences to date from date of arrest, which took place September 6.

With the sentencing of the men today, Judge Howay completed his labors, as all the other men implicated in the strike disturbances have elected for trial by jury.

Frank Ireland was found guilty yesterday by Judge Howay on charge of intimidating Peter Flynn and was sentenced to a term of two months in jail, sentence to date from the time accused was placed under arrest, forty-seven days ago.

A further despatch from Nanaimo under date of the 24th inst. gives the following additional particulars:—

In passing sentence on the prisoners convicted on charges arising from the recent coal strike riots, Judge Howay yesterday said that it had been no ordinary riot. It had not been a sudden outbreak of pent-up feeling, but a calm, deliberate scheme, a design from one end to the other.

The riots in Ladysmith, Extension, South Wellington and Nanaimo were simultaneous and carried out on a line of purpose. Bombs were thrown, property destroyed, and peaceful citizens made to flee for their lives, and a persistent state of terrorism indulged in.

"I have placed you in three classes," he said: "The leaders of the rioting, those who, while not leaders, yet nevertheless took part in most of the rioting, and those who were in the rioting crowds, yet did not take a prominent part. I recognize I have a duty to perform, painful in the extreme, but the law-abiding people in this community must be protected and punishment meted out that there should be no recurrence of these lawless acts."

When sentences were pronounced several of the prisoners' wives in the gallery screamed and became hysterical and had to be taken from the courtroom. At first his honor made all sentences to commence from date of sentence, but on application of counsel for the prisoners sentences were made to commence from date of arrest.

Of the prisoners sentenced, Taylor and Guthrie pleaded guilty to having taken part in the disturbances, and gave as their excuse that they headed processions in order to preserve peace by inducing the men to march in opposite directions.

Taylor is the father of a large family of small children, while Guthrie was married only a few days before the time of his arrest to a beautiful young girl, who was a political leader amongst the Finlanders.

Bauld served last year on the Ladysmith city council and has for years been closely identified with public movements. He declared in his defence that he had not been out of the house at the time he was accused of having taken part in the disturbances.

Robert Cossar has been a prominent figure in athletic circles in British Columbia for years, and prior to his coming to Vancouver had taken part in two international football matches between Scotland and England.

Stackhouse, who is now engaged in business at Ladysmith, lost his rank in the United States service some years ago and later rejoined under a different name, deserting from Fort Haynes about six years ago. He is a naturalized Canadian.

Judge Howay then proceeded to make the following slashing comment on the actions and attitude of the prisoners, which is probably one of the most severe arraignments ever uttered from the British Columbia bench, and which in the interests of law and order, should, as the Victoria Colonist editorially remarks, find a place in every self-respecting journal throughout Canada:—

"Your counsel has made to me various pleas," said his honor. "He has

told me that many of you pleaded guilty and that this is a factor which must be taken in consideration. I have looked over your faces to see if I could see any sign of sorrow or repentance for what you have done, but I fail to find one man among you to express sorrow for his lawless act. Your counsel knows there is no more sympathetic man than myself, one ever ready to extend mercy, but I have read over all depositions and find but little mercy you have shown. I read where homes with sickness were not free from missiles which you threw, and little children hid in cupboards and under beds to escape rocks thrown upon them in a merciless fusillade, and the only time any mercy was shown was when one of you said, 'Don't throw a rock at that house, there is measles there,' and when the cowardly bombs were thrown at the temperance hotel and at the home of Alex. McKinnon, the only mercy shown was the mercy of God.

"I was appealed to on behalf of your wives and children, but what do I find here? I find your women singing, 'Drive the scabs away,' and throwing rocks themselves, and these actions take away very much of the strength of the appeal for mercy on your behalf because of your women. The evidence shows not only a riot here, but that a far more serious charge might have been laid against you.

"I recognize I have a duty to perform, painful in the extreme, but the law-abiding people in this community must be protected, and punishment meted out that there may be no further occurrence of these lawless acts."

Personal and General

(Continued from page 19.)

London mining engineering firm of Hill & Stewart, has been making an examination of the Hudson Bay Mountain Co.'s group of claims in Hazelton district, Omineca mining district.

The following excerpt from an article in "The Canadian Mining Journal," in which particulars are given of the Canadian Nickel Corporation, will interest many readers of the "B. C. Mining Exchange." It is taken from "the initial memorandum prepared by the promoters of the Corporation: "Management—The operations of the company will be in the hands of the managing director, Mr. J. E. McAllister, who for the past ten years has been in active charge of successful metallurgical enterprises of this type. His experience and record, not only as an engineer, but in the successful application of technical knowledge to industrial business, especially qualify him to fill this important position. The heads of departments have been selected from men who have either been associated with him in the past or who are especially fitted, by knowledge and experience, to conduct the work of each branch."

Mr. Jas. McEvoy, of Toronto, Ontario, was at Coalmont, Similkameen, examining the coal property on which the Columbia Coal and Coke Co. spent much

money with unsatisfactory results during the last two or three years. The property has passed to the possession of others, who have appointed Mr. W. A. McDonald manager, and a scheme of operations that promises good results has been inaugurated.

Mr. James McGregor, district inspector of mines for West Kootenay, Boundary, and Similkameen, who about two months ago met with an accident when driving to Nelson from the Silver King mine, is able to get about again. He recently spent a few days in Victoria and Nanaimo.

Mr. Robert McKee, of Atlin, was in Vancouver for a while, before going East to place before capitalists some promising placer-gold mining ventures in Atlin camp.

Mr. E. H. Nutter, of San Francisco, California, chief engineer for the Minerals Separation American Syndicate, has been to the concentrating mill of the Silverton Mines, Ltd., on Four-mile creek, Slocan lake, where one unit of his company's flotation process plant has been tried, but so far with results not up to expectations. It is thought the changes to be made will bring about the desired success.

On Oct. 7, Mr. N. J. Ogilvie, head of the Canadian-Alaska boundary survey party, with Mr. J. M. Bates, arrived in Vancouver from the North, on their return journey to Ottawa.

Mr. G. W. Otterson, manager for the Kildare Co., operating on Slate creek, in the Omineca River district, has completed his season's placer-gold mining work and left British Columbia for Ottawa to report results to his principals there.

Mr. J. A. Osborne, construction engineer at the recently completed cement works near Princeton, Similkameen, has gone to southwest Alberta, to undertake construction and installation of equipment of new cement-making works there.

The Nelson "Daily News" recently published the following: "Bears are causing so much trouble at the Inland Empire mine near Paulson that Frank E. Pearce, manager of the property, is allowing the employees their time to go out and hunt. Raids on pigs and poultry at the mine caused Mr. Pearce to take this step. Two silver tip bears, each weighing about 400lb., were killed a couple of days ago by James Crendel and Mr. Billingsley, two of the mine employees, stated Mr. Pearce, who was in Nelson on Oct. 23."

Messrs. E. Perrier, of Goldfield, Nevada, and H. Ancarani, of Paris, France, were in Nelson on their way to Riondel, to inspect the Bluebell mine, in which they are interested. They were met in Nelson by Mr. S. S. Fowler, manager of the New Canadian Metal Co., which owns the property.

Mr. Oscar B. Perry, general manager for the Yukon Gold Co., passed through Vancouver early in October on his return from Dawson, Yukon Territory, to New York City.

Mr. H. Peplow Pearse was in Victoria at the end of October from Birch creek,

in which part of Atlin mining division he has for several years been in charge of hydraulic placer mining.

Mr. Ed. Peters has bought out the interests of his late partners in the mining agency business they together established in Nelson last year.

Mr. H. J. Pierce, president of the Payne and Rio mining companies, having properties in Slocan district, returned to Spokane a short time ago from a three months' business trip to Belgium and Holland.

Mr. Newton W. Pilger, of Butte, Montana, is superintendent at the Iron Mask mine, near Kamloops, where mining operations have been resumed. Mr. E. G. Wallinger, of Duluth, Minnesota, is general manager for the United States company now owning the property.

Mr. Noble W. Pirrie, of Vancouver, was married on October 16 to Miss Mabel Corbett, of Fairview.

Mr. C. H. Poirier, of Poillon & Poirier, mining engineers, New York City, has been examining the Golden Zone property, in Camp Hedley, for Mr. H. D. Brown, also from the United States, who is largely interested.

Mr. A. E. Rand, of New Westminster, who has for years actively interested himself in the development of mining properties in Nelson mining division, was at the Dundee mine, near Ymir, early in the month. Later he left the Province on a business trip to the Old Country.

Mr. Martin J. Ravey, of Vancouver, on his return to Bella Coola from a visit with a companion to the Anaham Lake country, gave the "Courier" an account of his trip. Among other things, he said: "On the trip we met Mr. W. Denham Verschoyle, promoter of the Pacific & Hudson Bay Railway, who had been inspecting some valuable iron properties in which he is interested. Mr. Verschoyle seemed very optimistic regarding the success of his venture. This will mean much to this country, which only requires transportation facilities in order to provide homes for hundreds of settlers."

Mr. S. H. Reynolds, of Victoria, formerly managing director of the Pacific Coast Coal Mines, Ltd., during the period in which that company constructed a railway from South Wellington to Boat harbor, Vancouver island, and built a dock and other shipping facilities at tidewater, has returned to civil engineering work in Manitoba.

Mr. L. V. Rice, of Robert W. Hunt & Co., Chicago, Illinois, a few weeks ago examined the Copper River coal field, in Skeena district, for the National Finance Co., of Vancouver.

Mr. Wm. Fleet Robertson, Provincial Minerogist, was at Hydraulic, on Quesnel river, during the month. He went over the placer ground and saw the hydraulicking plant on Twenty-mile creek of the Quesnelle Hydraulic Gold Mining Co. He was accompanied by Dr. W. G. Wilson, of the Mines Branch, Canada Department of Mines.

Mr. Elias Rogers, of Toronto, Ontario, president of the Crow's Nest Pass Coal

Co., was at Fernie, which is the company's headquarters in British Columbia, at the end of October.

Mr. W. J. Rolfe, of Toronto, has been examining mining property in Portland Canal mining division. Mr. Ralph Stokes, who was with him in that camp, went thence to Juneau, Alaska.

On Oct. 15, the Rossland "Miner" printed the following paragraph: "B. Rose, Ph. D., is in the city carrying on the work of E. L. Bruce, as assistant to Dr. C. W. Drysdale, who is completing the geological survey of the Rossland camp. Dr. Rose has been doing work on the coal resources of Saskatchewan for the Department of Mines. He will be here until the Rossland field work is completed, it is expected, in December."

Mr. Harry Shallenberger, of Spokane, Washington, who is at the head of a syndicate holding a group of iron-bearing claims in the southern part of Nelson mining division, was a visitor to Nelson lately.

Mr. Alexander Sharp, of Vancouver, was looking over mining property in the vicinity of Hope a short time ago.

The following paragraph is from the Nelson "Daily News" of Oct. 24: "I am delighted with what I have seen of Kootenay; its scenery is without equal even in Scotland, my home land, and I was surprised to see so many flourishing ranches along the shores of the lakes and rivers. Its mining development and the possibilities are not new to me, as I have been particularly interested in that feature of British Columbia's resources for some time," declared W. J. Sommerville, a mining engineer of Edinburgh, Scotland, who arrived in Nelson last night, after 14 days of travel across the Atlantic and Canada. He will leave this morning for Ainsworth, where he will assume a position with No. 1 mine. A recent graduate of Edinburgh university, Mr. Sommerville is anxious to secure practical experience in mining."

Mr. J. L. Stamford, of Victoria, paid another visit to the Pingree mine, a few miles from Nelson, during October.

Mr. R. T. Stewart, who for some time had been mine manager for the Corbin Coal and Coke Co., operating in south-east Kootenay, a short while ago left that district for the Brazeau coal field in Alberta.

Mr. M. H. Sullivan is honorary president and Mr. James Buchanan president of the Trail hockey club, to which offices they were elected at the organization meeting of the club held at Trail on Oct. 11. Mr. Buchanan is superintendent of the Consolidated Mining and Smelting Co.'s works, and Mr. Sullivan assistant superintendent.

The Spokane "Spokesman-Review" lately stated that Mr. E. L. Tate, mining engineer, had returned from several days' visit at Republic and Oroville, Washington, and Greenwood, B. C., in all of which districts he has mining interests.

Mr. B. L. Thorne, of the Hosmer Mines, Ltd., Crow's Nest Pass, was in Calgary, Alberta, in October.

(Cont. nued next issue.)



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve covering lands formerly held under expired Timber Licences Nos. 39195 and 38196, situated in the vicinity of Powell Lake, New Westminster District, is cancelled, and that said lands will be open for entry by pre-emption on Monday, the 3rd day of November, 1913, at the hour of 9 o'clock in the forenoon.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B. C.

aug. 2

nov. 1



NOTICE OF CANCELLATION OF RESERVE.

NOTICE is hereby given that a reserve covering certain lands situated in the vicinity of North Thompson River, Kamloops District, formerly held under expired Timber Licences Nos. 11267 and 13758, notice of which appeared in the B. C. Gazette on the 27th of December, 1907, is hereby cancelled and said lands will be opened to entry by pre-emption on Monday, the 8th day of December, 1913, at 9 o'clock in the forenoon; application to be made to the Government Agent at Kamloops, B. C.

ROBT. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B. C.,

27th August, 1913.

aug. 30

oct. 25



NOTICE OF CANCELLATION OF RESERVE.

Notice is hereby given that a reserve, the notice of which appeared in the B. C. Gazette of December 27th, 1907, is cancelled, in so far as it relates to lands formerly held under Special Timber Licences Nos. 32710, 38000, 40345, 10419, 40346, 40127, 31332, 11693, 40347, 40349, 40129, and 33317, all in Kamloops Land District, and the said lands will be open to entry by pre-emption at the hour of 9 o'clock in the forenoon on Friday, October 17th, 1913.

ROBERT A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B. C.,

15th July, 1913.



NOTICE OF CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under expired Timber Licence, No. 37459, notice of which appeared in the B. C. Gazette on the 27th of December, 1907, is cancelled.

The said lands situated on Lasqueti Island, and covering portions of Sections 11, 12, 14 and 15, will be open to pre-emption entry at 9 o'clock in the forenoon on Monday, October 20, 1913; all applications to be made for legal subdivisions of said Sections 11, 12, 14 and 15, Lasqueti Islands, which are within the boundaries of lands formerly covered by said licence.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B. C.,
12th July, 1913.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve, notice of which appeared in the B. C. Gazette on the 27th of December, 1907, is cancelled in so far as it relates to lands formerly covered by Timber Licence No. 41206, known as Lot 456, Sayward District, and same will be opened to entry by pre-emption on Monday, the first day of December, 1913, at the hour of 9 o'clock in the forenoon.

The lands in question will shortly be subdivided into suitable parcels for pre-emption, and all applications must be made in accordance with such subdivision, particulars of which will be available at the office of the Government Agent, in Vancouver, to whom applications must be submitted.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B. C.,

12th August, 1913.

aug. 16

nov. 15

J. J. Fingland is assaying at the Whitewater mine.

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CANCELLATION OF RESERVE.

Notice is hereby given that the reserve covering lands formerly held under expired Limber Licences Nos. 39195 and 38196, situated in the vicinity of Powell Lake, New Westminster District, is cancelled, and that said lands will be open for entry by pre-emption on Monday, the 3rd day of November, 1913, at the hour of 9 o'clock in the forenoon.

R. A. RENWICK,
Deputy Minister of Lands.
Lands Department, Victoria, B. C.,
30th July, 1913.

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INDEX

Subject:—	Page
The Granby Consolidated Mining, Smelting & Power Co., Ltd.....	5
Provincial Mining News.....	8
Mineral Resources of Ainsworth Mining Division	17
Placer Gold in the Southern Yukon.	17
Personal and General.....	18
Editorial	20
Metal Markets	21
Coast and Island.....	22
Coast and Island Mining.....	22
Portland Canal Ores Take Five First Prizes at Prince Rupert Exhibition	26
North Pender and Mayne Islands Reported as Probably Contain- ing Vast Deposits of Petroleum	27
Elk Mountain Properties.....	27
Vancouver Island Strikers Receive Exemplary Sentences	28
Member for Kootenay Pleased with Progress of Interior.....	33
"Hunter Jack" of Lillooet.....	35
Three Hundred Million Dollars Brought to Canada.....	36
United States Manufacturers to Open Up Canada.....	36
Right to Picket.....	37
Right to Work.....	38



NOTICE OF CANCELLATION OF RESERVE

NOTICE IS HEREBY GIVEN that the reserve existing on lands embraced in Township 24, Rupert District, notice of which, bearing date June 12, 1912, was published in The B. C. Gazette on June 13, 1912, be cancelled to permit of the pre-emption of said lands under the provisions of Section 10 of the "Land Act" on and after 9 o'clock in the forenoon of Friday, October 17, 1913; all such pre-emption entries to be made in accordance with existing surveys varying in area with a maximum of 40, 80 or 160 acres to each pre-emption, as the said lands may be subdivided by a survey.

R. A. RENWICK,
Deputy Minister of Lands.
9th July, 1913.
Lands Department, Victoria, B. C.

MINING STOCK QUOTATIONS.

Supplied by Waghorn, Gwynne & Co., Stock-Brokers, Vancouver, B.C.

LISTED STOCKS.

Spokane.

	Bid.	Asked.
Ajax .....	.08½	.17
Alameda .....	.00½	.01
Alhambra .....	.04½	.10
Ambergria .....	.05	.07½
Am. Comd'r .....	.00½	.01½
B. C. Copper	4.25	4.50
Black Horse .....	.01½	.02½
Bullion .....	.01	.02
Bullwhack .....	.48	.52
Caledonia .....	.23½	.26
Canadian Cons.	45.00	75.00
Carbonate Hill .....	.01½	.04
Copper King .....	.02½	.02½
Copper King (Che.) ..	..	.28
Federal, pref.	43.00	51.00
Federal, com.	16.00	23.00
Gertie .....	.05	.06½
Granby Smelter	68.00	70.00
Happy Day .....	.01	..
Hecla	2.20	..
H. E. M. ....	.07½	.09½
Hypotheek .....	.02½	.02½
Idaho Giant .....	.01½	..
Idora Hill .....	.02	.02½
International C. & C. ..	.37	.41
Jack Walte .....	.07½	.09
Laciede .....	.01	.03
Lucky Calumet .....	.01½	.02½
Lucky Jim .....	.13½	.17
Marsh .....	.22½	.26½
McGillivray C. & C. ..	.15	.18½
Missoula Copper .....	.02	.02½
Monitor .....	.01½	.02½
Moonlight .....	.04½	..
Nabob .....	.01½	.01½
Nugget Gold Mines ..	.25	.38
Oooni Paul .....	.01	.03
Puritan .....	.13½	.19
Rambler .....	.84	.90
Rambler Cariboo Ext. ..	.04	.05½
Silver Cable .....	.02½	.05½
Snowshoe .....	.01½	.02½
Snowstorm .....	.39	.45
Standard S. L.	1.35	1.47
Stanley .....	.03½	.04
Stewart	1.92	1.97
Tamarack Con.	1.25	..
United Copper .....	.60	1.00
Utica .....	.16	.19½

Industrials

	Bid.	Asked
Wash. Water Power Co. ..	133.00	136.50
Western Union Life ..	135.00	145.00
Interstate Con. Tel.	20.00	..
Tamarack and Custer ..	1.01	1.26

Cobalt Stocks

	Asked.	Bid.
Balley .....	.09½	.09½
Beaver Consolidated ..	.40½	.39½
Buffalo	2.30	2.10
Chambers-Ferland .....	.29	.28½
Great Northern .....	.09	.09½
City of Cobalt .....	.39	.38½
Conlagas	9.25	9.10
Crown Reserve	3.65	2.58
Foster .....	.11	.09½
Gifford .....	.06½	.06
Gould .....	.03½	.03½
Green Meehan .....	.01½	.01½
Hargrave .....	.08½	.08
Mc Kin. Dar. Savage ..	1.98	1.97
Nipissing	9.15	9.00
Ophir .....	..	.04
Otisse .....	.02	.01½
Peterson Lake .....	.25½	.25½
Rochester .....	.04½	.04
Right of Way .....	.08½	.08
Silver Leaf .....	.04	.04
Temiskaming .....	.34	.33½
Trethewey .....	.34	.32½
Wettlaufer .....	.15	.15

Porcupine

	Asked	Bid
Crown Charter .....	.00½	.00½
Dome Extension .....	.06½	.06
Foley O'Brien .....	..	.16
Hollinger	15.50	15.15
Jupiter .....	.37	.36
North Dome .....	.60	..
Pearl Lake .....	.30	.29½
Porc. Imperial .....	.02½	.02
Preston East D.04	.03½
Rea Mines15
Swastika10	.09½
Vipond20	.19½

Sundry

C. G. F. S.05	.04½
------------------	-----	------

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Closing quotations, Nov. 20:

Listed Stocks.

	Bid.	Asked.
Dominion Trust Co.	107.00	112.00
Great West Per., A.	126.00	130.00
International C. & C. ....	.30	.34
Vancouver Development ..	11.00	..
Alberta Canadian Oil .....	..	.02
Alberta Coal & Coke .....	..	.02
Nugget Gold Mines .....	..	.26
Portland Canal .....	..	.03½

Unlisted Stocks.

B. C. Copper	2.25	2.60
B. C. Per. Loan, A.	122.00	..
B. C. Trust Co.	102.00	..
Granby	68.00	71.00
Northern Crown Bank .....	..	96.00
National Finance .....	..	112.00
Pacific Coast Fire .....	..	..
Pacific Loan Co.	20.00	..
Canada Cons'd, M. & S.	78.00	84.00
American Canadian Oil .....	..	.04
Amalgamated Development ..	..	.00½
B. C. Refining Co. ....	.47	.56
Can. Call Switch .....	..	.28
Can. Pac. Oil of B. C. ....	..	.05
Coronation Gold .....	..	.30
Glacier Creek .....	..	.06
Grand Trunk Lands .....	..	.05½
Kootenay Gold .....	..	.08
Lucky Jim Zinc .....	..	.05
McGillivray Coal .....	.13½	..
Nicola Valley C. & C. ....	..	15.00
Rambler Cariboo .....	..	.29
Snowstorm .....	.24½	..
Standard Lead	1.60	1.80
Red Cliff Min. Co.05	..
Western Union Fire	50.00
White Island Sulphur	1.30	1.75
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A copy of the constitution and by-laws of the Association will be sent to every old public school boy who is not already a member thereof.

It is hoped that all may join, so that a complete register of old public school boys now in Vancouver Island may be obtained.

Old members who have not done so are requested to notify the Secretary of any change of address.

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MEMBER FOR KOOTENAY PLEASSED WITH PROGRESS OF INTERIOR.

The Victoria Colonist of the 6th ult. has the following interesting and encouraging interview with Mr. R. F. Green, M. P., on his return from a tour of his constituency:—

Mr. R. F. Green, M.P., returned yesterday from an extensive tour of his vast constituency in the Kootenay country, and the general impression which he brings back with him is that everything is most promising for future development. In fact, several features of the progress of the lake district of the province left a

powerful impression upon the mind of the member, and he is now looking forward to taking another trip over the remainder of the riding within the month.

Accompanying the member upon his interesting itinerary were Mr. Neil Mackay, M. P. P. for Kaslo, and Mr. J. Ford, the resident engineer for the Dominion Government, and in the latter connection it is gratifying to be able to report through Mr. Green that a number of wharves, for which appropriations were provided in the estimates of last session, have now been arranged for.

Speaking on the subject of his trip to the Colonist last evening at his home on Rupert street, Mr. Green said: "First we went to Arrowhead, then to Nakusp, from which point we took a launch and visited the many settlements on the Arrow Lakes, after which we proceeded to Rossland by train, and divided a day between that place and Trail, and then we went on to Nelson and visited all the settlements on the west arm of the Kootenay lake. On the following day we took a launch and went up to Boswell, Crawford bay, Gray's creek, Queen's bay, and the next day we pushed on to Ainsworth and Kaslo. From that wonderful spot in the Kootenays we proceeded to Lardo by launch, and thence to Hauser, and from there we went to Gerrard and Trout Lake City, and then we took the stage to Beaton and Arrowhead. That completes our tour, which I think embraces some five hundred miles, and represents about one-third of the territory in the riding.

Courage and Optimism.

"Wherever we went we were received most cordially. We made a point of meeting practically everybody, and it was splendid to notice the courage and optimism that the people of the Interior manifested toward the future. When I spoke to them of the work of last session and of what we had been able to accomplish for British Columbia they appeared to be most gratified. And, speaking of parliament, I may say that in every instance they were in favor of the Borden naval policy, and regretted exceedingly

that the Senate had seen fit to put Canada so severely in the wrong in regard to the Imperial relationship.

"I found conditions in the Northern country in a very good condition gen-

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erally. Of course, they have felt the hard times with the rest of us, but not to the extent that we have in some of the cities. Owing to the lumber being so bad at the present time, a number of the mills are temporarily closed, but they are looking for a better season next year. Mining, on the other hand, is picking up splendidly, and I am sure that Rossland was never in a more prosperous condition than it is at the present time, and the same remark applies equally to Trail. I was particularly pleased with the amount of improvement there is under way in the matter of clearing land in the fruit-growing and farming sections, not only on the Arrow Lakes, but on the Kootenay also.

"The Arrow Lakes country is being settled largely by Canadians, and people who have been in the country for some time, all of whom are sturdy and capable, and they are demonstrating in a most remarkable manner the possibilities of that section of the Interior for the growing of fruit, mixed farming and other works. Those who are settling around the Kootenay Lake district, on the other hand, are mostly English people, and from personal acquaintance I can say that they represent the very finest type. They are all splendid specimens of health and vigor, young and optimistic, and they are making their homes there, and doing well, not only in their own behalf, but in behalf of the province as well.

Much Progress Noted.

"Nelson, while naturally showing some signs of the recent depression, is now going ahead again with the old vim, and the city looks to have a splendid period of development in the coming year. Ainsworth is also coming into her own again, and, in fact, at the present time there are probably more men working in the mines of that place than ever before, which of itself is some indication of how things are going. Kaslo is as bright as ever. The people there are very hopeful as to the effect of the opening of the C. P. R. from Kaslo to Three Forks. It is expected that the road will be completed this fall, when they will be in touch with all the mining camps in the vicinity, and consequently, a somewhat important centre. The settlers in the vicinity of Hauser are doing good work in getting the land under cultivation, and the only drawback to that valley is the lack of adequate transportation facilities, and just as soon as the settlers are provided with better means of shipping their produce to the market, I look for a tremendous development in that vicinity.

"Mr. Ford and myself looked the ground over very carefully in connection with the requirements in the way of wharfage at various points, and I am happy to say that we were able to arrange things very satisfactorily. Arrangements are already under way for the building of a wharf at Beaton, East Arrow Park, and Renota, on the Arrow Lakes, and we hope to get the title shortly for sufficient foreshore at the Needles, also on Arrow Lakes, for the building of a wharf some time this fall. Other wharves are to be built at Willow Point and Kokanee on the west arm of Kootenay Lake this year, and arrangements have also been completed for the building of additional

wharves at Gray's Creek, Ainsworth, Kaslo, and Argenta, on the main Kootenay Lake, and for repairs to the existing wharf at Boswell which was destroyed by storm in the spring.

"At Crawford's Bay, too, the wharf is to be practically rebuilt. The appropriations for these wharves are already passed, and, of course, the work will be pushed ahead with all possible speed. That their completion will greatly facilitate the traffic that now operates on the lakes goes without saying; they will do more than that, for it is expected and, in fact, assured, that they will stimulate and encourage the traffic and in that way increase it tremendously.

Many Public Works.

"Speaking of these improvements, I might also refer to the suction dredge to be used on the Arrow Lakes, and state that the designs for the same must be completed by September 15, when the Government will call for tenders for the building of the same. The dredge will be of inestimable value in improving the lake waterways. The trade on the lakes is increasing every year, and the necessity for having them properly dredged is becoming more and more urgent.

"The Government this year is also putting in a number of beacon lights on the lakes. Many of them are already in, and the captains declare that the wonder is how they managed before. The water has risen much higher this year than for several years past, and there was a fear for a time that the flood of 1894 was going to be repeated, but, happily, all that is past now.

"I regret that I was unable to meet the Hon. Louis Coderre when he was on the Coast, but I am aware of his interest, and of the Dominion Government's interest in the mining industry in this Province, and I know that the minister will do everything possible to foster the manufacture of zinc on a paying basis. Already arrangements have been made

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for the carrying on of experiments by the Government with the plant of the company, which was assisted by the Provincial Government, and I have little doubt that, as a result of these experiments, much valuable information will be obtained regarding the possibility of establishing the electrical process.

"During our trip we enjoyed most excellent weather until the past two days, when we encountered heavy rain, but it seems that the downpour has been general."

"HUNTER JACK" OF LILLOOET.

One of the most successful placer miners in this district, up to the time of his death, says the Lillooet Prospector, was an Indian named Tashpola, better known as "Hunter Jack." Jack used to mine some part of the year near the South Fork of Bridge river, but where he found his nuggets of gold no one ever knew, and Jack never told anyone. This knowledge he kept strictly to himself, but the quantity of gold he sold here, beside the fancy prices obtained for the splendid nuggets he exhibited, proved conclusively that, somewhere,

Jack had found his Bonanza. Many people speculated as to where the locality was, and many sought the Eldorado, but no one found it.

Jack was a mystery to white men and a terror to the Indians. He was supposed to belong to the Seaton Lake reserve, but he never lived there; he had a cabin near the South Fork of Bridge river, but where his wanderings from there took him no one ever knew.

Jack was fond of intoxicating liquor, and bought it wholesale like a man. He has been known to have two dozen bottles in his possession on returning to the hills. He was not mean with it, and was a generous dispenser to any thirsty white man who met him on the trail. However, like others, too much of a good thing was the end of him. Holland gin conveyed him to the spirits, about four or five years ago, and the secret of his wealth was supposed to have died with him.

But now comes the story. The source of Jack's wealth has long been a theme amongst the Indians and a puzzle to them. For the last two or three years an Indian, well known as Mission Peter, has been prospecting in some of Jack's old haunts. Peter, if we make no mistake, was some relation of Jack's, and it is possible that, in his cups, Jack may have let some hint drop as to his private mining ground. Anyhow, Peter discovered a very promising piece of country near Whitewater river, and, from the signs still remaining, came to the conclusion that it must be Jack's old placer ground. Not being satisfied with his own tumtum, he consulted a white man, the white man being Charles L. Copp, late superintendent for the Coronation Mines, Ltd. Mr. Copp thought there might be something in it, so about three weeks ago he and Peter started with a small pack train.

Mr. Copp has now returned, and he is satisfied that they have found one of the richest placer fields in British Columbia. The sluice-boxes, about 8 ft. long—bought by Jack from the Chilcooten Indians—were found old and decayed, and other unmistakable signs went to prove that this was Hunter Jack's Eldorado. Mr. Copp thoroughly prospected the ground, with great success; the gold is coarse, and from the appearance of the surrounding country there are indications that good quartz ledges may be discovered there as well.

The navigation season of 1913 on Yukon river closed early in October.

Under date of Montreal, Oct. 21, the secretary of The Canadian Mining Institute addressed a letter to the secretary of the Western Branch of the Institute, as follows: "The next Annual Meeting of the Institute will be held in Montreal on March 4th, 5th, and 6th, 1914. It is proposed at this meeting to introduce several main topics of interest to members in general for discussion. I shall be greatly obliged if the Western Branch will consider and suggest topics which it is thought the Institute might discuss to advantage."

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THREE HUNDRED MILLION DOLLARS BROUGHT TO CANADA.

The Montreal Gazette says the estimate has been made by a financial authority that possibly close to \$300,000,000 has come into Canada in the last few months through sales of municipal securities, through exports of grain and through immigration, and that, despite the talk of continued stringency, the Canadian situation must have been relieved to that extent since the pinch began to be felt. The \$300,000,000 estimate, however, does not include sales of Canadian securities other than those of municipalities. Canadian Pacific Railway, through its new stock issue, is bringing in close to \$100,000,000 of outside money, and, despite a tight money market, good sized blocks of railway and industrial securities have been disposed of abroad in the first half of the year.

Immigrants Bring \$50,000,000.

Bankers estimate that close to \$150,000,000 must have been realized, in recent months, in the sale of municipal securities alone. It is further estimated that exports of grain held at the head of the Great Lakes through the winter has loosened up funds for the Canadian banks to the extent of \$100,000,000.

The tide of immigration has been flowing strongly and it is held to be a conservative estimate that the incoming settlers have brought with them at least \$50,000,000.

UNITED STATES MANUFACTURERS TO OPEN IN CANADA.

Governor Foss, of Massachusetts, issued a statement regarding the movement of United States manufacturers into Canada. He declared that in ad-

dition to the three to five hundred millions that have already gone across the border there are billions more to go.

The Governor says: "I find that up to January 11, 1913, approximately 175 American companies had established themselves in Canada."

Movement to Continue.

"I believe that this movement of American capital towards Canada is to continue. I believe that it will greatly increase from year to year under present fiscal systems in both countries.

"Undoubtedly the development of Canada in the next twenty-five years will be relatively greater than in the United States. This fact impels enterprising concerns to fortify themselves by locating within Canadian borders.

Controlled from Across Border.

"In many instances the plants which our manufacturers are establishing in Canada will be directly owned and financed by the parent concerns in this country, and in some instances even the payroll is met by the weekly shipment of funds from the American parent concern to its branch in Canada.

"I believe it is a conservative statement to say that up to date at least five hundred millions of American money has been imported into Canada in the building of American properties across the border."

The Provincial Mineralogist has forwarded to the University of Toronto for exhibition as a part of the special collection of the coals of Canada, in connection with the meeting there in August of the International Geological Congress, a number of representative samples, of good size, of the coals of British Columbia.

VALUE OF TIMBER INCREASING.

Timber, as an asset of provincial wealth, is daily becoming of greater value. With the opening of the Panama Canal and the free entrance of lumber into the United States, British Columbia timber will, it is predicted, be more sought after than ever.

"The day of \$2.00 timber is long past," was the answer of R. C. Bidlake, of the Snowdon-Bidlake Logging Co., of Kamloops, when asked concerning the value of standing timber. "Values are advancing rapidly, and it is impossible today to buy at anything like the figures of a year or two ago.

"For good timber that can be taken out at a reasonable cost, say on crown grants, it is very doubtful if anything can be bought under \$2.50 a thousand feet, taking the general run of the cruise, and figures over that are happening every day. Once a week or so a tract of one hundred million feet on Menzies Bay, Vancouver Island, was sold for \$3.00 per thousand feet, and another recent purchase of a tract a little smaller also went at \$3.00. Then there was the purchase on the Lower Lillooet a few weeks ago, also quoted at \$3.00.

"Crown-granted timber is in strong demand, and very few small tracts can be had for less than \$3.00. That it is being paid shows that the timber is worth it. Besides, at that figure buys are good, since values are advancing. A factor in determining values also is whether the logs have to be towed down, the cost for losses are bound to occur."

5,000 FACTS ABOUT CANADA.

The public will welcome the 1913 edition of "5,000 Facts About Canada," compiled by Frank Yeigh, the acknowledged authority on things Canadian and the author of "Through the Heart of Canada." Ten thousand copies are now sold annually, which find their way all over Canada and the Empire, indeed, the world.

"The Facts booklet is stuffed as full of information as a sausage is of meat," is the happy and true way an English journal puts it, and the new issue, which includes many new features and improvements, such as a colored map of the Dominion, presents a striking story of the wonderful advance of Canada in a single year. We now talk in billions.

The booklet is issued at 25 cents a copy, by the Canadian Facts Pub. Co., 588 Huron street, Toronto, and is sold by all the leading newsdealers.

THEY MUST BE BUILT.

It is quite certain that the three ships must be built, and if Canada does not build them the British Admiralty must provide them. Even in the North sea British predominance is small and precarious—22 fully manned British battleships at this moment to 20 German battleships. That is a position, the danger of which requires no accentuation.—London Daily Mail.

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A RE-DISCOVERY.

The Victoria Colonist of the 18th ult. says:

A Smithers, B.C., correspondent writes The gold strike on Sibola creek and Tahtsa river, sixty-five miles south of here, reached by the Morice river trail, turns out to be a re-discovery of old diggings with an interesting history. "Kid" Price, who has just located the pay on Sibola creek, says he found an old sluice box, rotten with age, and the new placer district has been connected with the story of the two missing prospectors, an incident of British Columbia mining in the early seventies. A miner from the Cariboo district is said to have followed the Morice river Indian trail and originally located the new diggings at that time.

The season being late, he went to Victoria to winter, intending to return in the following spring and work the rich placers he believed he had found. But he fell sick and died in Victoria during the winter. He told of his discovery, however, to two miners, who set out early in the spring to wash out the gold their dead comrade had found. After going into the country they were never heard of again, and it was supposed they were both killed by Indians.

AN ERROR EXPLAINED.

Hamilton Herald: Addressing the Dominion Trades and Labor Congress, J. W. Wilkinson, a delegate from British Columbia, denounced the Canadian militia and declared that it is "kept for the pur-

pose of clubbing workmen into submission." The gentleman is in error. When the militia is called out to assist the police, it is not called out to "club" workmen as such. It is called out to suppress riots and disperse rioters. We wonder if Mr. Wilkinson would contend that it is the eternal and inalienable right of workmen to indulge in rioting—to wreck and burn property and to maim and kill folks whom they object to.

RIGHT TO PICKET.

The Herald has always maintained that the right of a union to use pickets did not carry legal immunity for mob demonstration. This was before the decision of the Privy Council on picketing in Canada was published, and was based upon experience of strikes in the United Kingdom. As a matter of fact even in the Old Country picketing did not comprehend more than peaceable persuasion. It allowed to the members of a trades union their right to place their side of the case before workers who continued at work or were brought in after a strike had been declared. Persuasion could only be attempted so long as the workers approached by the pickets were willing to listen. Persistence by union pickets after the worker refused to listen meant molestation, and in any event a crowd whether of six or six hundred amounted to intimidation.

An old country newspaper just received shows the correctness of this view. A

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strike of warp-twisters at Keighley resulted in a demonstration against some of the hands who continued to work. The result was that the leaders in the demonstration were arrested and charged with "persistently following," and "following in a disorderly manner" certain employees of the company against which the strike had been declared. After evidence had been taken in the police court hearing the charges were withdrawn upon the union giving an undertaking that in future there would be no hissing, booing, band-playing or demonstrations of any kind or interference with the people working at the mill.

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It will be seen that there is a strict legal definition to picketing even in the United Kingdom, and when it is remembered that it was company officials against whom the demonstrations were directed here it must be conceded that every possible latitude was allowed the strikers.

MORE APPROPRIATE MATERIAL

Some of these suffragette antics awaken the suspicion that woman wasn't made from Adam's ribs at all, but from the funny bone.—Charleston News and Courier.

BETTER FORGET IT.

Some of the legal highbrows at Montreal threaten to bring Thaw back to Canada. But they won't. The Montreal jurists would look much better, and add to their lustre if they simply had the good sense to scratch the incident off the records.—Guelph Mercury.

THE RIGHT TO WORK.

Under the above caption the Victoria Colonist of the 21st ult. has the following interesting editorial which present conditions and recent events render most timely:—

A very popular misconception prevails as to the percentage of workers who belong to trade unions. When an organized body of workmen records a decision about something or other, we are told that it is the voice of labor, whereas in the great majority of cases it is nothing

of the kind. In every country in the world non-union workers outnumber the union men. Speaking from a national standpoint, we do not know a single country in the world where organized labor represents the majority of the workers. In the current number of Engineering we read the following:

"It is not consistent on the one hand to demand 'elementary freedom' for unionists while coercing men to join a union upon pain of industrial ostracism. Trade unionists are, like all propagandists, justified in seeking to induce men to join their societies; but it is reprehensible in the highest degree, if not illegal, to demand the discharge of men from work, and to enforce such demands by strikes, because they are exercising the right of freedom of action within the laws and ethics of citizenship."

We will give a few figures on the trade unionism of the world which will bear out what we have said above, and which also form an interesting commentary on the foregoing paragraph from Engineering. In Great Britain the trade unions comprise 3,010,000 members, or 22 per cent. of the army of workers in that country. In Germany trades unionism has 3,061,000 members, or 22 per cent. of the working population. In France the number is 1,029,000, or 9 per cent.; in Belgium 199,000, or 14 per cent.; in Holland 154,000, or 20 per cent.; in Norway, 54,000, or 26 per cent.; in Denmark, 128,000, or 30 per cent., and in the United States 2,283,000, or 10 per cent. In Canada, out of 1,300,000 workers, only 160,120, or a little over 12 per cent., belong to trades unions. Statistics of this character have the effect of putting a different light on the right of strikers to prevent the employment of

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NORTH BOUND				Distance from Victoria	EFFECTIVE 7.00 A.M. JULY 25th, 1913	SOUTH BOUND					
No. 7 First-Class Sunday Only	No. 5 First-Class Except Sunday	No. 3 First-Class Daily	No. 1 First-Class Except Sunday			No. 2 First-Class Except Sunday	No. 4 First-Class Except Sunday	No. 6 First-Class Except Sunday	No. 8 First-Class Saturday Only	No. 10 First-Class Sunday Only	
A.M.	P.M.	P.M.	A.M.			A.M.	A.M.	P.M.	P.M.	P.M.	
De.10.00	De. 5.00	De. 2.00	De. 9.00		 Victoria	Ar. 8.30	Ar.11.30	Ar. 4.30	Ar. 7.15	Ar. 6.00
" 10.05	" 5.05	" 2.05	" 9.05		 Hillside	" 8.25	" 11.25	" 4.25	" 7.10	" 5.55
" 10.20	" 5.20	" 2.20	" 9.20	5.26 Royal Oak	" 8.10	" 11.10	" 4.10	" 6.55	" 5.40		
" 10.25	" 5.25	" 2.25	" 9.25	6.34 Beaver Lake	" 8.05	" 11.05	" 4.05	" 6.50	" 5.35		
" 10.35	" 5.35	" 2.35	" 9.35	8.91 Elk Lake.....	" 7.55	" 10.55	" 3.55	" 6.40	" 5.25		
" 10.40	" 5.40	" 2.40	" 9.40	10.69 Keating	" 7.50	" 10.50	" 3.50	" 6.35	" 5.20		
" 10.45	" 5.45	" 2.45	" 9.45	12.83 Saanichton	" 7.45	" 10.45	" 3.45	" 6.30	" 5.15		
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non-union men. Strikes are perfectly legitimate, provided they are conducted without violence of any kind. It should not be forgotten, however, that the right to work is inalienable to our citizenship. It is an elemental right that, in all civilized countries, must be preserved. In view of the fact that organized labor in every country in the world is clearly in the minority, and in many cases is outnumbered many times by the different bodies of unorganized workmen, the latter are perfectly justified in maintaining their "elementary freedom," and working whenever and wherever they can obtain legitimate employment.

PRINCETON CEMENT.

The cement industry, just started in East Princeton, has a very bright future owing to the great demand for the product and to the proximity of all the raw materials. It is an illustration of what

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may be done in the manufacture of fire and building brick, paint and pottery, the raw materials for which are also found here. The present price of cement laid down in Princeton is about \$6 per bbl., which will be cut in half as soon as delivery is made by the B. C. Portland Cement Co. To sum up: there is everything to encourage and facilitate the investment of capital in Princeton district. —Similkameen Star.

GRANBY SHIPMENTS.

During the period of January 1st to July 7th, of this year, the Granby company at Grand Forks has smelted a total of 648,553 tons of ore of which amount 642,203 tons were from the Granby mines and 6,250 tons from other properties. In the same period Granby has made and shipped a total of 11,273,697 pounds of blister copper.

A GOOD SUGGESTION.

"What do the suffragettes want, anyhow?"

"We want to sweep the country, dad."

"Well, do not despise small beginnings. Suppose you make a start with the dining room, my girl."—Louisville Courier-Journal.

NOT IN SIGHT.

The Senate insists that bank notes should be sterilized. What difference does it make when they're all quarantined?—Winnipeg Post.

Miss Ada J. McDougald, of New Denver, has been enterprising to prepare a map showing mineral claims in Slocan mining district. Messrs. Drewry & Twigg, then of New Denver, prepared for the Report of the Zinc Commission, issued in 1906, a map which was the base of Miss McDougald's map, but the

latter is twice the size of the former—it is 37 by 52 inches—and has the name of each mineral claim shown as well as the number. Further, it has been brought up to date, so shows Crown-granted claims not on the map used in the Zinc Commission report. The scale is 1500 ft. to the inch. Blue prints of this useful map are obtainable from Miss McDougald at \$5 each. For several years, especially since the renewal of interest on mining in the Slocan, the want of a comprehensive and reliable map has been felt, so Miss McDougald's enterprise is timely, and she is finding numerous customers accordingly.

The Mining Magazine, London, England, has the following in its "Books Reviewed" notices for July: "The Gold Fields of Atlin, B. C. Pamphlet, 36 pages, with map. London: Alexander Moring, Ltd. Price 1s. This pamphlet has been published by the authority of the Atlin district board of trade. It will serve to draw attention once more to a placer-gold district, which has been neglected of late, situated behind Chilcoot and Juneau City." It will be seen that even in London it is difficult for mining journalists who have spent much time and have large interests in the United States to avoid directing attention to that country. Why not have stated that Atlin is in Northern British Columbia? Surely the name of British Columbia must be better known in England than those of Chilcoot and Juneau City, which are in Alaska.

Last month the Boston Commercial published a list of "Copper Dividends," which was "a record of 1913 declarations and total to date." Included in the list were the following: British Columbia Copper Co., 15 cents a share \$88,756; total to date \$1.10 a share, \$615,349. Granby Consolidated M. S. and P. Co., March \$1.50, \$224,464, June \$1.50, \$224,465; total for 1913, \$3 a share, \$448,929; total to date, \$20.30 a share, \$4,475,385.

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The aggregate value of the Mineral Production of British Columbia is

\$430,137,522

As follows: Placer Gold, \$72,194,603; Lode Gold, \$70,859,022; (Total Gold, \$143,053,625); Silver, \$33,863,940; Lead, \$27,520,753; Copper, \$73,723,562; Zinc, Iron, etc., \$1,528,403; Coal and Coke, \$132,871,155; Building Stone, Brick, Cement, etc., \$17,576,084.

The substantial progress of the Mining Industry of the Province is strikingly exhibited in the following table, which shows the value of production for successive five-year periods:

For all years to 1892, inclusive.....	\$ 81,090,069
For five years, 1893-1897.....	31,420,396
For five years, 1898-1902.....	77,218,073
For five years, 1903-1907.....	109,797,744
For five years, 1908-1912.....	130,611,240

Aggregate value of Mineral Production..... **\$430,137,522**

A Great Mining Region

British Columbia is pre-eminently **A GREAT MINING REGION**. Its mines already yield virtually all the Lead mined in Canada, more than one-half the Gold, nearly three-quarters of the Copper, fully one-quarter of the Coal and about one-tenth of the Silver, and a share of some other minerals. This high rank has been reached notwithstanding that prospecting of even the most desultory character has been carried out only on a small, almost insignificant, part of the area, and this chiefly in districts lying south of the main line of the Canadian Pacific Railway.

Minerals Widely Distributed Throughout British Columbia

COAL occurs in vast quantities. The recently published estimate of a well-known Dominion geologist places the coal content of the various known coal areas of the Province at: Anthracite, 61,000,000 tons; bituminous, 39,674,000,000 tons; lignite, 490,000,000 tons; total, 40,225,000,000 tons. Coal mines are being worked in Southeast Kootenay, Similkameen, Nicola Valley, Vancouver Island, and others are being opened on Queen Charlotte Islands, Skeena River, and other widely-separated parts of the Province.

GOLD is also found, practically all over the Province. The largest known Placer Gold fields are in Cariboo and Atlin districts. An official estimate of gold-bearing gravels in Quesnel division of Cariboo district alone is 2,500,000,000 to 3,000,000,000 cubic yards, containing \$300,000,000 worth of gold. Lode Gold is now obtained chiefly from mines in Rossland, Nelson, Boundary, and Similkameen districts. The Coast district gives every promise of also yielding much lode gold when more mining shall be done in it.

SILVER in comparatively large quantity comes from Slocan, and Boundary mines. Lardeau, Rossland, Nelson and Coast district mines also produce silver. Much more is expected from mines now being developed in Portland Canal and Observatory Inlet and the Skeena and Omineca districts.

LEAD is mined in greater amount in East Kootenay than other parts, but Slocan, Ainsworth, Nelson and Lardeau mines also produce this metal. Skeena district gives promise of producing lead ere long.

COPPER mines in Boundary district are the largest producers of this metal in Canada. Rossland and Coast districts also yield copper. Kamloops and Similkameen are both known to have large deposits of copper ores awaiting utilization.

ZINC AND IRON will yet become important contributors to the mineral production of British Columbia, there being much ore containing one or other of these metals, in various parts of the Province.

OTHER MINERALS occur, though little has yet been done to utilize them. Among those found are: Cinnabar (Mercury), Pyrites, Scheelite, Tungsten, Molybdenum, Platinum, Mica, Gypsum, Magnesite, Chromite, Asbestos, Petroleum, etc.

REDUCTION WORKS include Copper and Lead Smelteries, Stamp Mills, Silver-Lead and Zinc Concentrating Mills, Electrolytic Lead Refinery, etc. The largest Copper Smeltery in the British Empire is that of the Granby Company at Grand Forks, B. C. Smelteries and Mills are equipped with modern machinery and metal-saving appliances.

CAPITAL—Capital can now find here many excellent opportunities for investment, as the value placed on mines and undeveloped properties has reached a reasonable basis. If proper business care is used, and the experiences of competent men utilized, these investments should be safe as well as profitable.

MINERAL LANDS—Mineral lands are open to location to any person over 18 years of age, who has obtained a free miner's certificate, and perfect title to lode claims can be easily secured after \$500 worth of work has been done per claim.

For information, reports, bulletins, etc., address

THE HON. THE MINISTER OF MINES, VICTORIA, B. C.

The British Columbia Mining Exchange

AND ENGINEERING NEWS

VOL. XV.

VANCOUVER, B.C., NOVEMBER, 1913.

No. 11

Recent Developments in Alberta Oil Fields

(By our Special Correspondent, R. G. STARK)

The Oil Excitement at Calgary — Excellent Oil Showings of High Quality — Exploitation of Oil Resources of Alberta Takes Long Step Forward—English Expert most Favorably Impressed with Indications—Investing Public Warned to Exercise Care in Purchase of Oil Stocks—Favorable Comment on Showings by Dominion Geological Department

The Calgary fields have recently been attracting world-wide attention, and experts representing the biggest oil interests have been looking over the ground, and in practically every case the reports have been extremely favorable. Mr. Cunningham Craig, the well known Old Country expert, who has been examining the ground on behalf of the Mowbray

Berkeley interests, professed himself convinced that oil existed in commercial quantities, but stated that only actual drilling would establish the fact for a certainty.

There is no longer the least doubt but that there is oil throughout southern Alberta, and that several anticlines exist, but in most cases they are very narrow, so that it would be possible to sink

several wells in one section, strike oil in commercial quantities in one, but not in any of the others. Moreover, the nature of the ground, and the narrow formation of the anticlines, make it extremely hard for the experts to locate the main body of the oil. The following chart prepared by Mr. W. S. Herron of Calgary from geological reports of the Dominion Government, gives the stratification of the Okotoks oil fields:

FIVE LIFE PERIODS	ROCK SYSTEMS		
	Recent Alluvial deposits, peat, etc.	The Age of Man	
QUATERNARY			
CAINZOIC	Pliocene Miocene Eocene	Clay Sandstone Shales Conglomerate	Climate, temperate to tropical. The Age of Mammals. Vegetation still abundant in Arctic zone. Elephants in Rocky Mountains.
MESOZOIC	Cretaceous Jurassic Triassic	Shales Coal Sandstone Chalk Marl	Climate, tropical. The Age of dinosaurs, plesiosaurs, crocodiles. Enormous vegetation.
PALAEOZOIC	Carboniferous Devonian Cambrian	Coal Fireclay Salt Limestone Quartzites, gold	Climate, tropical. Enormous vegetation; mammoth ferns; reptiles and fishes.
ARCHAEOAN	Laurentian Gneiss Granite	Gold Cobalt Copper Nickel Silver Mica Iron Feldspar	The dawn of life. Lifeless age.
			GLACIAL PERIOD PETROLEUM PETROLEUM SLIGHT VEGETATION NOTHING DOING

Every one has been struck by the exceptional quality of the oil obtained, chiefly from the Dingman or Discovery well near Black Diamond, about sixteen miles west of Okotoks. This oil, a sample of which the writer has at the office of the B. C. Mining Exchange, was taken straight into Calgary and sold unrefined at 30c per gallon for use in autos, and the unanimous opinion of the users was that it generated more power than the ordinary oil. An analysis of the oil from the

Dingman well gives the gasoline distilled at 50 to 150 degrees centigrade, specific gravity 67.5 Baume, percentage distilled 90 per cent.

Development work has already been started, and several companies are getting machinery to the ground, so that by next spring some 60 to 70 wells are expected to be in operation in the Okotoks and High River districts.

A very important factor in the situation is that natural gas-flows in large commercial quantities have been obtain-

ed at both the Dingman and McDougal Segur wells, and if it can be piped into Calgary and other prairie cities should be in itself a first-class commercial proposition. At present in Calgary the gas company are claiming a franchise on the whole of the city, but the city maintains that the franchise is confined to the old city boundaries. The settlement of this question may have a considerable bearing on the future of the natural gas companies. However, possibly the franchise to the gas company only mentions

coal gas, in which case natural gas could be piped in without opposition.

Several houses in the Okotoks and High River localities have been for a considerable time past heated and lighted by natural gas flows, struck as a rule while digging wells at a depth of from 70 to 300 feet, and in some cases the water in wells has been so oily that it has not been drinkable. The existence of oil in this district has been known of for some years, but has only recently been exploited.

This natural gas is of great benefit in development work, as after the first hundred feet or so of drilling has been done, it provides both power and fuel for the remainder of the operations. The gas obtained from the Dingman well is of the heavy "wet" grade, and contains amounts of the higher paraffine hydrocarbons. This should be very suitable for the production of gasoline under commercial conditions of liquifaction. The gas at present obtained at Bow island is "dry" and therefore not suitable for gasoline production. There are several coal mines around Okotoks, and there is of course coal in large quantities throughout southern Alberta, but we think we are right in saying that it is soft coal in every case, although it is frequently stated that anthracite is found, but the geological formation is not that in which anthracite is found.

The price of the various drilling companies of between \$8.00 and \$10.00 a foot seems extremely high. In the California fields the price is about \$4.00 to \$5.00 per foot.

With regard to the various companies formed, or being formed, at Calgary, we would suggest that great care is taken to investigate the soundness of the concern chosen for investment, as although local men of unquestioned integrity and good standing are in control of some of the companies, others are not desirable, having been formed in a wild-catting spirit, and should be avoided. The Calgary agents of the B. C. Mining Exchange, Messrs. Oil Exchange and Auction Mart, Thomas Bldg., Calgary, will be pleased to give reliable information upon application mentioning this journal.

The other form of speculation at present being indulged in by the general public is the acquiring of leases near the scene of activity in the expectation that they will rise considerably in value on any strike being made. This seems quite a legitimate gamble, and may yield very large returns, but on the other hand if no strike is made the money is entirely lost. The best method is to acquire the rights over several 40 acre tracts in various parts of the field, as this gives more chances of being near a strike than buying a lump acreage in one place. Any syndicate starting actual development work should have a working capital of at least \$100,000.

We would again advise applying to our Calgary agents for information as to the best leases still obtainable, also before purchasing any property get a qualified mining engineer to inspect it. This can be done for about \$25.00.

Samples of the oil straight from the Discovery well, maps and listings on view at the Exchange Office, 658 Gran-

ville St. We shall be glad to furnish any information in our power.

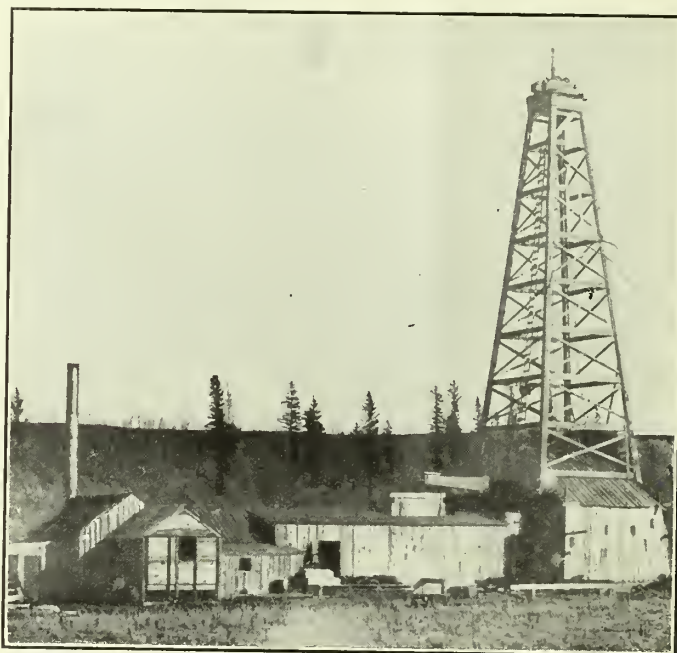
Two views furnished by courtesy of The Mineral Age, a weekly Calgary journal, of the Dingman well, are given above. The surrounding country is rolling and broken with rock outcrops, the actual well being close to the steep side of a creek. There is a coal mine working quite close at Black Diamond, which is situated in the foothills.

The probable source of the oil is seepage from the Rocky Mountains. The Dingman well is down some 2,000 feet and oil in larger quantities is being obtained every day. The company state that they are prepared to go over 4,000 feet if necessary. At present about 15 barrels a day are being obtained from overflow. Twice lately some slight stoppage in the machinery caused cessation of drilling operations for a few hours and hard baling was necessary to clear

largely of gasoline. In fact, it has been successfully used in its raw state in place of gasoline in an automobile.

"White oils" are rarely found in quantity. They would appear to be the result of filtration through clay strata, under pressure, of the lighter portions of ordinary petroleum. That this has occurred in the present instance is made probable by the fact that at a higher horizon in this well a flow of gas of 2,000,000 feet a day, was struck. This gas is also peculiar in the large amount of gasoline it contains. It probably represents a further stage in the process of filtration.

The amount of oil present has not yet been determined, so that the commercial value of the strike is still unproved. If the amount of gas encountered in the higher level is any criterion, this may prove to be the exceptional case and a considerable quantity of oil, for a "white oil," be obtained.



VIEW OF DINGMAN WELL.

(Courtesy of The Mineral Age, Calgary, Alta.)

out the oil that collected. The Dingman shares originally \$10.00 have been recently sold for \$70.00.

Since writing the above Mr. Cunningham Craig's report has been published in the Old Country and it is of an extremely favorable nature.

RECENT STRIKE OF OIL AND GAS IN WESTERN ALBERTA.

The Geological Survey has received a sample of the oil recently struck in No. 1 well, of the Calgary Petroleum Products Company, situated at Black Diamond, sixteen miles west of Okotoks, Alta. This oil was struck at a depth of about 1,560 feet. It is what is technically known as a "white oil," being transparent and of an amber color. It is phenomenally light for a natural mineral oil having a specific gravity of about 62 Baume. Evidently it consists

Whether oil is present in large quantities or not, the strike is of importance as the "white oils" are usually found only in the vicinity of large bodies of the ordinary petroleum. Thus it is an excellent indicator.

Mr. D. B. Dowling, of the Geological Survey, who visited the well shortly before the strike was made, reports that the well is located on an anticline, in shales of the Pierre formation, and that the oil was encountered in underlying Belly River beds. On either side of the anticline overlying Edmonton beds are exposed. Going eastward, therefore, the covering will rapidly thicken. Westward toward Moose mountain, according to the work of D. D. Cairnes of the Survey, the formations are folded into a number of anticlines, bringing lower formations to the surface, and in Moose mountain faults are encountered. Between the faulted ground and the well are several anticlines where prospecting for oil might be undertaken. These anticlines

probably run in the direction of the main structural lines, that is, roughly parallel to the mountain ranges. Mr. D. B. Dowling of the Geological Survey is now in the field, having been commissioned by the Director to examine the well and make a study of the geology of the district.

UNCOMMON MINERALS

Some Interesting Minerals and Ores of the Ainsworth-Slocan District.

One of the most enthusiastic men in Kootenay District on the subject of ore occurrences, is Mr. Wm. Thomlinson, of New Denver, who has resided in the Slocan for 21 years, during which he has spent much time exploring and prospecting in various parts of that district and, incidentally, has made a close study of the minerals that have come under his notice. Quite recently he pre-

pared some notes on the subject of the more rare or uncommon minerals found in Ainsworth, Slocan and Slocan City mining divisions, and since he had spent the summer and autumn of this year in making a comprehensive and fully representative collection of minerals for the British Columbia Department of Mines, he is unusually well informed and consequently better fitted to give information on the subject than most others. In passing, it may be mentioned that Mr. Thomlinson has got together a very fine and valuable collection of ore specimens and the exhibition of which should be of great value to Slocan and Ainsworth mining camps.

Mr. Thomlinson's notes on "Uncommon Minerals," which were contributed to the "Slocan Record," follow:

During the past field-work season the Provincial Bureau of Mines employed me for several months to collect ore samples and mineral specimens from the

mines and prospects of the Slocan, Slocan and the Ainsworth mining divisions. Most of the ores collected were typical wet and dry ores of gold, gold-silver, silver, silver-lead, zinc-silver and zinc; and many were remarkable for their fine appearance and high-grade quality, but as they are the common ore well-known ores of the district, a description of them is not now given.

Beside the typical ores mentioned a number of ores and minerals, unusual in this district, were seen or collected and it is to the latter that the following notes refer:

1.—At both the Whitewater and Wellington mines on Kaslo creek, Ainsworth mining division, a peculiar type of silver-lead ore occurs. It has little resemblance to the silver-bearing galena of the district, being quite black in color and of a structure much like a fine-grained black limestone. Spec-

4.—The silver-lead ores of the Slocan generally, contain little or no gold, but a remarkable exception is found at the Monitor mine at Three Forks. The ore from this mine gave smelter returns of more than \$10 a ton gold, in addition to silver and lead contents.

5.—One of the most attractive specimens of silver-lead ore collected was received from Mr. D. A. MacKenzie of the Hope mine, Sandon. The specimen, assaying 250 oz. silver a ton and 65 per cent. lead, was entirely covered by beautiful shades of pale green, blue, red and purple colors—the best example of so-called iridescent tarnish, or oxidation I have ever seen.

6.—At the Wonderful mine, near Sandon, samples of the silver-lead ore won by placer mining methods were obtained and, later on in the season, ore samples obtained by lode mining were taken from the underground workings. Placer mining for galena is unique in the mining world and the finding of such large amounts of high-grade silver-lead ore in surface wash is quite remarkable. More than 500 tons of ore was found in the surface wash and some pieces of this float ore weighed fully half a ton each. Pieces of this ore resemble boulders of a limy rock, but when handled or broken the difference is at once noticeable.

7.—At the Reco mine, near Sandon, some fine samples of ore were obtained. Several of these showed bunches of a peculiar antimonial mineral, rich in silver and also contained some lead.

This mineral, or compound, has been called both antimonial silver ore and jamesonite, but it appears to vary in composition from either of them. Associated with this antimonial ore is a secondary mineral that burns freely like sulphur, which it much resembles in appearance.

8.—Samples showing the antimonial variety of ruby silver ore, pyrrargyrite, were received from the Van-Roi and Hewitt mines, near Silverton, and specimens of ore containing arsenical ruby silver ore, proustite, were collected from the Victor-Silver Cliff group on Tenmile creek, and from the Apex mine near New Denver.

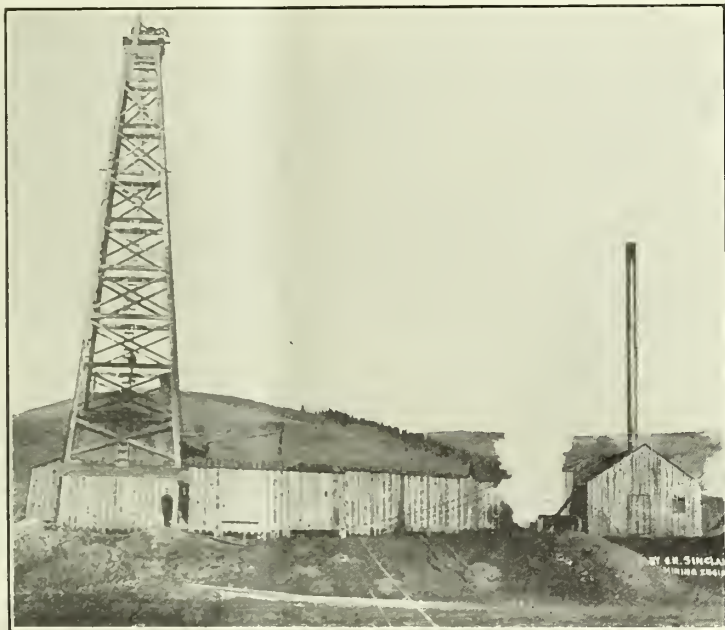
Students of ore deposits and mineral veins can get some interesting data at the Apex mine, where there are two veins, one containing "wet," or silver-lead ore, and the other high-grade "dry" ore of gold and silver.

9.—Samples of ore showing much native silver were obtained at the Molly Hughes mine, New Denver, at the Black Prince mine near Slocan City; and at the Silver Hoard mine in Ainsworth camp.

10.—Fine specimens of arsenical iron, arsenopyrite, in a quartz gangue and assaying from \$15 to \$50 a ton in gold, were found at the L.H. mines a few miles south of Silverton.

11.—A banded pyrite, sulphide of iron, assaying up to \$100 a ton in gold, occurs in the Morning Star claim near Slocan City.

12.—Large amounts of barite, sulphate of barium, is found as vein gangue on



ANOTHER VIEW OF DINGMAN WELL

(Courtesy of The Mineral Age, Calgary, Alta.)

mens of this ore can be hammer-trimmed like a piece of rock. Locally it is called "black ore" and carload shipments gave returns of silver 40 to 80, viz., a ton, lead 20 to 35 per cent.

2.—Some fine specimens of crystallized zinc blende of good form and lustre were seen at the Lucky Jim, above Bear lake, Slocan mining division.

3.—On the north fork of Carpenter creek, about nine miles from Three Forks, a deposit of stibnite (sulphide of antimony) was examined and samples of ore taken. This ore of antimony occurs on the Alps—Alturas group of claims, and a 30-ton shipment, made some years ago, is said to have averaged 65 per cent. antimony. The samples taken all show the peculiar columnar crystallization of stibnite, but much of the ore seen was, in appearance, like fine-grained galena, and had, for some time, been mistaken for that mineral by the finders of the deposit.

the Calumet claim and on the Myrtle, both in Slocan City mining division. Small amounts of the same spar were noted in several other places in the district, and fluorspar, fluorite, was seen in small amounts at the Enterprise and Eastmont mines on Ten-mile creek.

13.—Several small, but good, specimens of argentite, sulphide of silver, were received from Mr. John Wafer of Slocan City.

Ainsworth Camp.

Nearly half a ton of samples of the typical silver-lead ores of the camp were collected in Ainsworth camp, and several unusual ores and minerals were noted.

14.—At the No. 1 mine bunches of a massive pyrite, assaying up to 500 oz. silver a ton have been found, and higher up the mountain to the westward and near the main granite contact, a peculiar porous silicious dry ore of silver occurs in the Skyline claim.

15.—The vein or ore-bearing zone on the Krao claim is notable for its curious concretionary forms of limy rocks and for the fine specimens of native silver found in the vugs or cavities in the ore-bearing zone of rocks. Mr. A. D. Wheeler of Ainsworth, who owned the Krao some years ago, has a number of specimens which, for size and weight surpass, I think, any specimens of native silver found elsewhere in this province.

16.—A fine sample of slicken-slided wall rock was received from the Banker claim, and specimens of a purplish-red fluorite from the Highland mine were seen.

17.—On the Roy claim an interesting dike rock occurs. This dike is about 10 ft. thick and it has along its central part, for a width of two or three feet, a mass of large jet black crystals in a hard, fine-grained greenish ground mass. The composition of these black crystals has not yet been determined, and local prospectors think they may contain some ore of tin. They may, however, be only some variety of hornblende, pyroxene, or titanite, minerals of no economic value.

18.—Ainsworth itself is quite an interesting place to a student of rocks or minerals, as the town is built mainly upon a bed of lime tufa, deposited by the waters flowing from a series of hot springs along the mountain side within the township.

19.—A most enjoyable and interesting day was spent visiting and obtaining samples from the historic old Bluebell mine at Riondel on the east shore of Kootenay lake, nearly opposite Ainsworth. This great deposit of minerals is remarkable in many ways and its immense outcrop, weathered for ages, is certainly a regular treasury of uncommon secondary minerals, formed by alteration from the primary minerals of silver, lead, zinc, copper, iron and other elements.

20.—From properties tributary to Kaslo a large number of ore samples were collected, and several unusual minerals or ores observed. Samples of silver-bearing galena, assaying more than 80 per cent. lead, were obtained

from the Alpine and Liberty claims, situate on the south fork of Kaslo creek.

21.—Messrs. MacKay and Powers of Kaslo donated samples of a porous, red "gossan" from the outcrop of a great vein situate on Hall creek in the upper Duncan river country. This porous red ore is said to come from a vein outcrop which is more than 30 ft. in width, and the ore is said to assay from \$9.40 to \$18.20 a ton in gold.

22.—Mr. Andrew Jardine of Kaslo, supplied several small specimens of the rare mineral linerite. Only two occurrences of this mineral have so far been noted in the province. One is on the Beaver claim on Blue Ridge mountain, a few miles westerly from Kaslo, and the other is at Atlin in the northern end of the province. This mineral is of little economic value but is valued by collectors on account of its rarity and its beauty of color. It is complex secondary mineral composed of copper, lead, sulphur, oxygen and water and is of a beautiful deep azure blue color.

23.—When visiting properties along the south fork of Kaslo creek I saw some interesting sights worthy of mention.

On the Silver Bell claim I was shown where an uprooted tree exposed the vein containing rich silver ore, in the same manner that the Bosun vein was found on the Fidelity claim near New Denver. A day later I saw a wonderful example of the force of a snowslide. At a point where a slide occasionally crosses the wagon road a tree trunk 14 in. thick has been driven, torpedo fashion, some 15 ft. clear through another tree about 5 ft. in diameter, a mute witness that there has been "something doing" in that vicinity.

24.—On the Early Bird claim, situated on the shore of Kootenay lake near Ainsworth, I saw and sampled a good showing of silver-lead ore exposed in a vein cut by the grade of a new wagon road being built by the Provincial Government.

(Continued on Page 17)

FRANKLIN CAMP, NORTH FORK OF KETTLE RIVER.

Part of Boundary District North of Grand Forks, Again Attracting Attention—Geological Survey Reports on the Camp.

Mention was made in the Provincial Mining News published in last month's issue of the B. C. Mining Exchange, of a shipment of ore from the Union group of mineral claims, situated in Franklin camp, North Fork of Kettle river. As there appears to be good reason to expect that more ore will be shipped from that camp now that a commencement to ship in commercial quantity has been made, it is thought that information relative to the geology and minerals of the camp will be read with more than ordinary interest. The following particulars have, therefore, been reprinted from the "Summary Report" of the Geological Survey of Canada, and the Grand Forks "Gazette," the latter being a district newspaper.

Mr. R. W. Brock's Report.

In 1906 Mr. R. W. Brock, now Director of the Geological Survey of Canada, spent a short time in Franklin camp. The "Summary Report" for that year (pp. 62-65) contains a brief report prepared by Mr. Brock, who said, in part:

"A reconnaissance survey of this part of the country was made by the writer and Mr. W. W. Leach of this Survey in 1900, and the topographical features and salient points in the geology are shown on the West Kootenay map sheets, issued some time ago.

"In the day's visit to the camp this summer nothing could be done toward correcting the outlines of the geological formations as given on the map. When the survey was made the country was timbered and the position of the geological boundaries had usually to be assumed. Since then fires have swept over the camp, and the rocks and ledges are much better exposed.

"The geology of the camp is somewhat complex. The oldest series of rocks represented consists of limestone usually much metamorphosed to crystalline limestone, to green lime silicate hornfels, to a baked-like siliceous rock highly fractured, and to breccia or conglomerate-like rocks, some with limestone surrounded by green silicate and some with green silicate-nodules in a limestone ground mass; of argillites and of greenstone. The altered limestone is much more extensive than represented on the map. A large area consists of grey Nelson granodiorite which is intrusive in the basal rocks. Both these formations are intruded by a gabbro-like rock and a porphyritic syenite with long, coarse, reddish feldspar crystals. All the above-mentioned rocks are cut by a light acid granite ('Valhalla granite') toward the West Fork divide, and by pink alkali syenite ('Rossland alkali syenite') to the east. Numerous dikes from these intrusives cut the older formations. Overlying the older formations like a mantle are Tertiary rocks which now occur in isolated patches but which formerly extended as a continuous capping. These rocks consist of a quartz-like rock, gritty tuffs

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with coarse conglomerate bands, and conglomerate beds with interspersed ash rocks. Overlying these again are lava-flows consisting of andesites and trachytes and agglomerates formed from them, basalts and ash beds.

"The conglomerates hold boulders, from one-half inch to two feet in diameter, of the older rocks, particularly grey granodiorite, limestone, greenstone, and an older fine-grained conglomerate. The conglomerate appears to cover a greater area than represented on the map, reaching in places to the North Fork bottom. It is cut by dikes of the alkali syenite and by dikes from the volcanic rocks. The lavas have in places a basaltic jointing. Some beds are rich in gas pores in which calcite, agate, and zeolites are develop-

"(5) Chalcopyrite in fractures and replacing minerals of the granodiorite or porphyritic syenite.

"Both in the nature of its ore deposits and in its geology this district bears a strong resemblance to the Boundary Creek district. The rocks are very similar and the contact metamorphism, forming lime silicates and magnetic chalcopyrite deposits is the same. In Franklin camp, of course, it has yet to be proved that mineralization was on the same gigantic scale as in the Boundary, and that the ores have the minerals in the same proportion to make them so amenable to smelting."

Mr. C. W. Drysdale's Report

In 1911, Mr. C. W. Drysdale, with two field assistants, made a detailed geolog-

nature was done in this area by R. W. Brock in 1900 and 1906, and the geology and topography of Franklin mining camp are shown on the West Kootenay sheet mapped on the scale of 4 miles to 1 in.

"The first mining claims located in Franklin camp were the Banner and the McKinley, which were staked in the summer of 1896. The locator of the Banner claim was Frank McFarlane, after whom the camp was named. The Gloucester and adjoining claims were located by Thos. Newby in the summer of 1898. These were followed by the White Bear in 1899; the Maple Leaf in 1902; the Evening Star in 1903; the Buffalo in 1904; the IXL in 1904, and many others.

"The year 1906 saw the greatest activity in Franklin, when considerable development was carried on. Since then comparatively little prospecting and mining have been done.

"The past season's field work was carried on with a view to determining the probable extent, value, and geological relations of the mineralized areas opened up in this camp.

General Character of District.

"The Franklin area falls within the Columbia Mountain system, which here has an elevation of 2,800 ft. above sea-level in the valleys and 5,000 ft. on the summits.

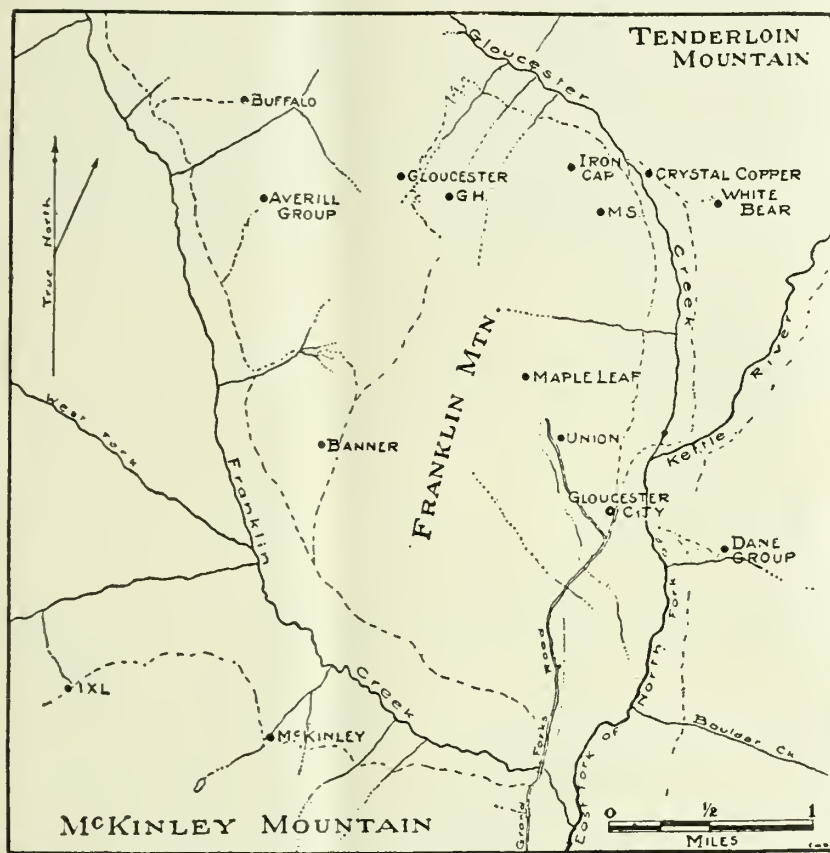
"The district has a mature upland surface from 4,000 to 5,000 ft. above the sea, and, except where lava cliffs occur, may be characterized as gently undulating with hills seldom rising over a few hundred feet above its general level. Many of the depressions on this old upland are occupied by stagnant ponds or sloughs.

"The main valleys which trench the upland have a north and south regional trend and vary in width from about 3,000 ft., as is the case in Franklin Creek valley, to more than a mile in the main Kettle River valley. The valleys have steep, sloping sides converging to narrow bottoms with an average depth of over 1,500 ft.

"The valley sides show the scouring and smoothing effects of glaciers, while their bottoms are largely filled with re-sorted glacial material which the rivers, since the retreat of the ice-sheet, have excavated in a series of step-like terraces. These river terraces of glacial outwash gravels have since then been deeply dissected by the rivers which have entrenched box canyons and ravines, leaving in some places the tributary creeks and 'draws' as hanging valleys high above the water level of the main stream. These 'hanging valleys' and 'draws' are characterized by the presence of ribbon-like waterfalls and cascades at their confluence with the main valley.

"Those portions of the district underlain by the coarse heterogeneous phase of the Kettle River conglomerate, present striking land forms in the shape of many hummocky mounds with outstanding pinnacles or 'hoodoos.'

"The fall of the North Fork of Kettle river between Franklin and Grand Forks amounts to about 1,100 ft., giving the



DIAG. 6. Location of principal mining properties, Franklin district, B.C.

ed. The abundant intrusive rocks have profoundly altered the older rocks and ore deposits are developed in the latter.

"The deposits consist of several types:

"(1) Iron and copper sulphides in a gangue of altered country rock, i.e., green lime silicates, as garnet, epidote, hornblende, quartz, calcite.

"(2) Magnetite deposits, with some copper and iron sulphides, and the same gangue minerals.

"(3) Galena-blende and chalcopyrite, with only a slight amount of green silicates.

"(4) Quartz veins, with galena-glende, pyrite and chalcopyrite, molybdenite, arsenopyrite, etc.

ical examination of Franklin camp. His report, as printed in the "Summary Report" for that year, follows:

Introduction.

"The Franklin camp is situated on the east branch of the North Fork of Kettle river, about 43 miles by wagon road in a northerly direction from Grand Forks. The Kettle Valley branch of the Canadian Pacific railway terminates at present at Lynch creek, some 20 miles up the valley from Grand Forks.

"During the past field season a detailed geological map on the scale of 1,500 ft. to 1 in. was completed. The Franklin map embraces an area of some 16 square miles and includes the most important mineral deposits of the region. Previous work of a less detailed

river an average grade of about one-half of one per cent.

"There is sufficient water-power available for ordinary mining purposes in Franklin and Gloucester creeks as well as in the main Kettle river.

"The average rainfall amounts to about 20 in. per annum, a large part of which falls as snow in the winter months. The summers are moderately warm and dry with cool nights, while the winters are severe with heavy snow-fall, particularly on the western slopes of the mountains.

"This region was once heavily wooded with fir, tamarack, spruce, white cedar, cottonwood, white birch, and poplar; but forest fires have swept over a large portion of the district and only isolated groves of good timber remain.

"Black-tail deer are numerous, and beaver, owing to protective game laws, have become very plentiful. Black and brown bear, mountain lion or 'cougars,' and coyotes are less frequently seen.

General Geology.

"The rocks in this region are chiefly igneous, and, as no sections for microscopic study have been examined, only field terms are used in the following description.

"The post-Jurassic (?) granodiorite varies in composition from a mica or a hornblende granite to more basic rock types. Foliated structure is frequently developed in it. It underlies all the other rocks of the region and possesses igneous contacts, proving its younger age. Its border contacts are irregular and steep in character, widening downwards. The massive and underlying character of the igneous rocks composing it defines it as a batholith, and after the fashion of other batholiths its plunging contacts are evidences of a wider development below, so that at the time of its origin the overlying rocks were in the nature of a roof resting on a molten magma.

"Monzonite.—This is a medium to coarse-grained mottled rock. It is fresh looking with dark pyroxene and dark brown mica with white and grey feldspar. It outcrops in two bosses, one at the base of Tenderloin mountain, and the other to the north of Franklin mountain. The monzonite is cut by dikes of pegmatite, and more rarely by others of the pinkish pulaskite porphyry type. In places it is sheared and brecciated, having magnetite and quartz developed along the planes of shear. The monzonite resembles closely the Rosslund monzonite which R. W. Brock refers to the Mesozoic era. Here,

ranging in character from a sill to a laccolith, and appears to be closely associated with the monzonite into which it is intruded. The syenite varies in composition from the normal form to a phase rich in hornblende, black mica or biotite, and pyroxene crystals with which is associated copper sulphides. This phase or differentiation is consequently black in color and is locally known as the 'Black Lead.' Where the syenite formation is the narrowest, as in the northwest corner of the district, this differentiation is the best developed.

"Midway Volcanic Group.—The Midway volcanic group here occurs as remnants of Tertiary lava flows, and is found chiefly on the hill tops. The rocks range from rhyolite to basalt and vary in thickness from 500 to 1,500 ft. Agglomerates, volcanic breccias, and vesicular, and amygdaloidal lavas are common. The borders of the exposures, as a rule, form prominent cliffs, at the bottom of which caves occur in many places. A prominent dike rock, older than the above-mentioned lavas, is a pinkish porphyry (pulaskite porphyry), locally known as 'birds-eye porphyry,' consisting largely of feldspar with biotite, hornblende, and pyroxene sparingly developed. In many places it becomes quite granitoid in texture and passes off into alkaline syenite. Similar

Table of Formations.

System.....	Formation.....	Lithological character.
Quaternary.....	Superficial deposits.....	Gravel, sand, silt, boulder clay.
Miocene(?).....	Midway Volcanic group.....	Pinkish pulaskite porphyry, dark basic dyke rocks—lamprophyres; quartz porphyry, and lavas ranging from basalt to andesite and rhyolite.
.....	Syenite.....	Pyroxenites (local term 'Black Lead')—syenite.
Oligocene(?).....	Kettle River formation.....	Conglomerate, grit, and tuff.
(?).....	Monzonite.....	
Post-Jurassic(?).....	Granodiorite.....	Massive igneous rocks from granite to diorite and in places sheared to gneiss.
Palaeozoic (Upper ?).....	Gloucester formation.....	Crystalline limestone.
	Franklin group.....	Greenstone, altered tuff, jasperoid, and silicified argillite.

Description of Formations.

"The Franklin group includes the oldest rocks in the district. It has been subjected to the metamorphic action of intrusive magmas of Mesozoic and Tertiary ages and to so many mountain-making movements that its record of sedimentation and vulcanism has been greatly obscured. The group consists of impure grey quartzites, jasperoids, altered tuffs, greenstones in places porphyritic, and brecciated and sheared volcanic and intrusive rocks indicating a complex of igneous and sedimentary rocks in their original state. The rocks of this group have a general strike a few degrees east of north and dip steeply to the west. In places they exist as down-hanging portions of an ancient roof suspended in the underlying granodiorite batholith—termed by R. A. Daly, 'roof-pendants.'

"The Gloucester formation consists of light to dark grey crystalline limestone which occurs as irregular masses interfolded with the Franklin group. The limestone usually grades off into jasperoid and in a few places it has been entirely replaced by silica. These limestones are possibly of the same age as those occurring farther south, which Daly included in his Atwood series of Carboniferous age, correlating them with the limestones in Rosslund mountains.

on account of its fresh appearance and lack of dynamic metamorphism as compared with the Mesozoic granodiorite, it has been tentatively referred to Tertiary time.

"The Kettle River formation, which has a very strong development in this area, consists of a conglomerate with pebbles ranging from a few inches up to two feet and more in diameter. In places the conglomerate grades into well-stratified white to light grey grits and silts which display cross-beddings and current markings. In a few localities obscure plant remains were found in the shaly portions of this formation. The zone of maximum deposition appears to have been near the junction of Franklin creek with the East Fork, where the conglomerate is very coarse and heterogeneous and is here exposed to a depth of 150 ft. This formation may possibly be correlated with the Coldwater group of Dr. G. M. Dawson, lying to the south, which occurs in several localities throughout the Boundary district, notably at Phoenix, Baker mountain and west of Midway. The age of this formation is Oligocene, as determined by the plant remains found in it.

"Syenite.—Intrusive into all the preceding formations is a syenitic rock characterized by elongated crystals of feldspar which lie usually parallel to each other. It occurs as an irregular mass

pulaskite dike rocks occur commonly throughout the Boundary district as at Phoenix and Deadwood, but in the latter localities are older than the local development of the lavas. The youngest dikes, which, on McKinley mountain, cut through lavas, quartz porphyries, and conglomerates alike, are dark, soft, basic lamprophyres (minettes) made up largely of pyroxene and biotite. Some of the eruptives of this group appear to occur as sills along the upper border of the granodiorite batholith, between it and the rocks of the Franklin group, as exemplified in the quartz porphyry capping McKinley mountain.

"Quaternary—Superficial deposits. The recent deposits consist of glacial till grading from boulder to fine clay; scattered glacial erratics on hill tops; glacio-fluvial deposits in the form of terraces (bench-lands) occurring at frequent intervals on valley sides from 5 ft. to more than 100 ft. above the valley floors; and talus from cliffs and residual soil formed from the disintegration of rocks beneath.

Economic Geology.

"Development work was carried on last summer on the McKinley property under bond by the British Columbia Copper Co. Beside this work done on the McKinley, assessment development work was carried on at the Dane group, Averill group, Union, Buffalo, and Royal Tinto claims.

"The list of mining claims arranged in alphabetical order is as follows: Ajax, Aldie, Alert, Alpha, Alto Fr., Antelope, Athelstan, A.X.; Banner, Banner Fr., Big Cub, Black Bear, Blue Jay, Bryan, Bufalo, Bullion, Buttercup, Bystander; Columbia, Cottage, Crystal Copper; Doris Fr.; Eclipse, Eganville, Evening Star, Florence, Franklin; Gloucester, Gloucester Fr., G.H., Golden Age, Grande; Hanna, Hennekin, Hit-or-Miss, Homestake; Ida, Iron Cap, Iron Hill, IXL; Jumbo; Last Chance, Little Cub, Lucky Jock; Maple Leaf, May, McKinley, Montana, Montezuma, Mountain Lion, Munster, M.S.; Nakusp, Nellie, Newby Fr.; Old Dominion, Omar, Opher, Ottawa, Ouray; Pinto; Rio; San Francisco, Shelby, Standard; Thuot, Fr.; Wallace, Waverly, White Bear; Yellow Jacket; altogether 75 claims, all of which are Crown granted with the exception of the Blue Jay claim.

"McKinley.—The McKinley property is located on the north slope of the McKinley mountain, about 1½ miles west by pack trail from the crossing of Franklin creek by the road to Gloucester City. There are three distinct types of ore deposits on this property: galena-blende, pyrite-chalcopryite, and magnetite types. The galena-blende type follows predominantly the limy portions of the mineralized zone, while the pyrite-chalcopryite and magnetite types follow the siliceous portions, as a rule.

"The mineralized zone is irregularly distributed and is always close to the Gloucester limestone which is interfolded with the Franklin group rocks.

"The gangue minerals include garnet, epidote, chlorite, quartz, calcite and actinolite. The rock and ore associations here resemble in many ways those occurrences at Phoenix, Deadwood and other copper camps throughout the Boundary district, where the ores appear to be of contact-metamorphic origin.

"Maple Leaf.—The Maple Leaf property which has not been worked for four years, is situated in the east slope of Franklin mountain. The ore, consisting of copper sulphides and carbonates, is in the contact zone of the Tertiary syenite with the altered tuffs of the Franklin group, and the ore is chiefly confined to the syenite, in which it occurs as replacements along shear-zones. Work was carried on also in the basic differentiate from the syenite or 'Black Lead' along the lower border of the syenite sill.

"Buffalo.—The Buffalo claim, which is situated in the northwest corner of the map area, is one of the 'Black Lead' claims; and here the differentiate of the syenite has copper sulphides 'disseminated' through it in small quantities. The ore is not far from a monzonite contact, and both syenite and monzonite are cut by a northeast and southwest system of pulaskite porphyry dikes.

"Similar so-called 'Black Leads' occur on the Averill group, situated on the same contact but farther to the south-east, where bornite is associated with the chalcopryite, and also on the Blue Jay claim adjoining the Buffalo to the south-east.

"Banner.—On the Banner claim, one of the pioneer properties in the camp, no work has been done for some years. The ore is zinc-blende, galena, and chalcopryite in a quartz gangue. The country rock

is jasperoid and altered tuff of the Franklin group.

"Gloucester.—The Gloucester property is situated on the Gloucester Creek slope of Franklin mountain. It was bonded by the Dominion Copper Co. in 1906, and before that to the British Columbia Copper Co. No work has been done on it since 1906. The ore is chalcopryite, pyrite, with a little molybdenite occurring in the contact zone between much brecciated grey granodiorite, which is largely calcified and silicified near the contact, and the Franklin Group greenstones.

"Adjoining the Gloucester to the southeast is the G.H. claim, on which is a magnetite and pyrite deposit. This occurrence also is similarly associated with the granodiorite which underlies it.

"Other claims staked on this contact are the Iron Cap, M.S., and Crystal Copper, on which very little development work has been done.

"Copper and Riverside.—These two claims, owned by A. Gelinas and J. Senter, are situated about one mile south of the map area and across the East Fork of the North Fork of Kettle River from Lower Franklin townsite. The property at present is under bond to the British Columbia Copper Co. The ore is disseminated chalcopryite and pyrite with some molybdenite in a quartz and calcite gangue. The country rock is sheared, calcified, and silicified granodiorite. The strike of the shear zone along which the mineralization has taken place is north 55 deg. W., and can be traced for some hundreds of feet."

SHIPMENT OF ORE FROM UNION GROUP.

On August 16 the Grank Forks "Gazette" gave the following information:

"Shipments of ore from the Union group of claims, located in Franklin camp, 46 miles up the North Fork of Kettle River from Grand Forks, was commenced this week, when 12 tons of ore was delivered at Lynch creek, the present terminal of the Kettle Valley railway's North Fork branch, 18 miles up the river from this city.

"The group of claims, which comprises the Union, Union Fraction, Idaho and Paper Dollar, all adjoining; they are owned by Louis Johnson, Pat McGinnis, Jack Henderson and the Mike McDonald estate, each holding a quarter interest.

"The ore runs high in gold and silver, assays giving returns of from \$35 to \$230 per ton, with only a trace of copper. The formation is a new one for the camp and gives promise of being very extensive, the orebody having been traced by means of open cuts across four of the adjoining claims.

"The paystreak, from which the ore is extracted, is on the Union claim; it is 16 ft. in width at practically the surface, and indications of its increasing as depth is gained are favorable. A glory hole has been started on the Union claim, and for the present at least, this system of mining will be carried on, although a tunnel several hundred feet down the hill has been driven for a distance of 50 feet, and Patrick Byrnes is working on a contract for the further extension of this by another 50 ft., which it is thought will tap

the lead. The open cut or glory hole is rapidly assuming proportions, a large crew of men being employed on the work; it is some 75 ft. long and 50 ft. wide.

"More than 100 tons of shipping ore is now on the dump. This is being sacked and sent down a 300 ft. chute to the end of the new wagon road constructed by the owners of the Union to connect with the government wagon road. Messrs. Peterson & Hansen of this city have the contract for the hauling of 100 tons of ore from the Union to Lynch creek, a distance of 28 miles, the transportation costing the owners of the Union \$15 per ton. Two outfits are at present being used by the contractors, each wagon carrying two tons to the trip and making two trips per week. The ore will be treated at the Granby Co's smelter here, and it is stated by Mr. Johnson, who is in charge at the mine, that the treatment charges will be \$6 per ton.

"The Union is the first property in either Franklin camp to undertake the shipment of ore on a commercial basis, and if the smelter returns from the first 100 tons are satisfactory, it is the intention of the owners to continue making shipments.

"There are a number of properties being worked more or less in the two northern camps this season, and the owners are anxiously awaiting the smelter returns from the shipment of Union ore to determine whether they can undertake the shipping of their ores by wagon to Lynch creek or not. The present high cost of transportation, and the need for better roads between the railway and the mines will, however, prevent a number of properties from doing anything in the way of shipping until such time as the road shall be placed in safe condition for the heavy loads or the Kettle Valley railway shall complete its spur to Franklin camp, which will put the mines in rail communication with the Granby smelter."

On September 20 the "Gazette" printed the following later news:

"Following the report which reached the city this week that the ledge had been struck in the tunnel on the Union claim in Gloucester camp, a small stampede started for Gloucester and Franklin camps on the North Fork, with a view to locating any likely looking property not located, as well as analyzing prospects of claims now recorded.

"The new strike reported is in a 75 ft. tunnel at a depth of 100 ft. from the glory hole from which the recent shipment of ore was made, and it is said to be more promising in appearance than the ore shipped. What is regarded as a fairly authentic statement of the returns obtained from the recent shipment from the Union is that about \$80 a ton gross was realized from the 23 tons smelted, so that notwithstanding the heavy transportation charges of \$16.50 and smelting charges of \$6 about \$58 per ton would be netted outside of the mining costs. It may be safely considered that the owners realized well over \$50 a ton after deducting the cost of mining.

"These figures represent the average, of course, of the 23 tons shipped and the shipment consisted of the entire diggings of the glory hole, no selection of ore having been made. It is stated that much of the ore ran higher than \$150 to the ton. While it can only be regarded as

an estimate, the Union is reported to contain 100,000 tons of pay ore. This is based on proving the ledge by tunnels at a depth of both 50 and 100 feet.

"H. C. Kerman, F. M. Kerby and Donald McCallum have returned to town after spending some days in the North Fork camps. Each is very enthusiastic over the prospects for big mining camps at both Gloucester and Franklin, and themselves staked some likely-looking fractions. The apparent ledge of the Union group can be traced for several miles, and connects up the leads of several other well-known properties in the district, from which excellent assays have been secured in the past but were not regarded as sufficiently developed to make shipments. The resumption of work on a number of the more important properties in the district at an early date is looked for, and with a little more general development work done the showing should be sufficient to warrant the Kettle Valley railway in commencing construction of a line to the camp. The company

MADE TRIP OF 1,000 MILES IN LOWER INTERIOR.

The following account of a trip recently made by Mr. W. M. Brewer, of Victoria, was published in the Victoria "Colonist":

Many of the mining properties of British Columbia, which have proved unprofitable in the past through extravagance and lack of transportation facilities, are today being placed on a paying basis by the adoption of scientific methods and the improvement of the provincial highways, and the industry has a still brighter outlook for the future on account of the promise of early completion of the several lines of railway that are now under construction in the Province.

Brighter Outlook for Mining Industry.

The foregoing opinion is that of Mr. W. M. Brewer, the well-known mining engineer, who has just returned from a

south fork of the Bridge river, and crossed the river to the Wayside mine, situated near the mouth of the Sucker creek.

New Mining District.

From this mine he travelled down Bridge river to a point between Gun and Tyaughton creeks, and from there followed the old trail about 15 miles to the northwest, and examined the new mining district in Taylor basin near El Dorado creek. From this district he went to Lillooet and then travelled about 40 miles up the north fork of Bridge river to the Spokane group. From this point he journeyed to Ashcroft and thence to the Iron Mask mine, near Kamloops. Next he examined the Copper King, the Glen Iron mine, the Python, Whealtamar, Evening Star, Bill Nye and Kimberley properties, and thence down to Grand Prairie, where he looked over the gypsum deposits. He crossed the Thompson near Kamloops



Col. W. M. Brewer, the well-known Mining Authority, in the Field. Taken at Lost Creek, 12 miles from Seward, Alaska, Head of Resurrection Bay, Kenai Peninsula.

now have its railway operating as far as Lynch creek, 18 miles up the North Fork from Grand Forks, and by extending the line $26\frac{1}{2}$ miles further it would not only tap both camps but would also serve several other properties en route which ceased operations through lack of transportation facilities. Franklin and Gloucester camps are about three miles apart. Numbers of Grand Forks and Phoenix people are interested in claims, and the British Columbia Copper Co recently renewed its working bond on a Franklin camp group of claims."

The United States assay office at Seattle, in common with other U. S. assay offices in the Western States, has ceased temporarily to receive gold, in accordance with an order sent out from the Treasury Department, Washington, D. C. The order, it is stated, was made necessary by the fact that Congress had failed to make an appropriation to cover the cost of transportation of gold from western assay offices to the United States mints.

trip through part of the Interior undertaken for the Provincial Department of Mines. Mr. Brewer, who left Newport on August 1, travelled more than 1,000 miles in the course of his journey, the whole of which, except for a distance of about 75 miles, was accomplished on horseback.

Leaving Howe sound, Mr. Brewer proceeded to the headwaters of Indian river, and from there traversed the route of the Pacific Great Eastern Railway to the mouth of McGillivray creek. He followed this creek and then travelled over McGillivray summit, where he examined several copper and silver properties. Leaving the Summit, he went down to Cadwallader creek, where he examined the Coronation, Pioneer, Blackbird, Countess, Ida May, Lorne, Why Not and Woodchuck mining properties. In addition to these properties, which are all free-milling gold quartz claims, he examined several hydraulic properties on Cadwallader creek. From this point he went to the mouth of the

and inspected the Hill Top and Lac le Bois properties and the Kamloops gold fields. His next move was up the Salmon Arm to the Mount Ida group, and from there to the head of the Arm and up the north arm of Seymour creek to what is known as the Cotton Belt Summit. Here he examined the new galena properties and the Shushway group of claims, and thence journeyed back to Kamloops. Leaving this city again, he travelled up the North Thompson river to the Louis creek placer grounds, to Adams lake and on to Mile 86. He returned by way of the west side of the Thompson river and examined a group at Jamieson creek, before starting on the return trip to Victoria.

A Fine System of Roads.

"Except for about 25 miles that I had to do on foot, and a length of 40 miles down Shushwap lake on the steamer, I covered the entire distance of more than 1,000 miles on horseback," said Brewer. "The most striking feature of

the whole trip was the splendid system of roads that I encountered everywhere. Except for the trails over the McGillivray Summit, up the north fork of the Bridge river and up Seymour creek, the whole trip could be made by motor car."

Mr. Brewer said that, although the agricultural land in these districts is necessarily limited in area, a large number of homesteaders have gone in this year, especially in the Kamloops and North Thompson districts, and as a proof of the fertility of the soil, he says that grain has been grown without irrigation as high up as Rose mountain, which stands 1,600 ft. above the level of Kamloops. He says that the Indians on the north fork of Bridge river are cultivating some fine farm lands, and are growing crops of all kinds, which can compete with the best products of the oldest white settlers.

Prospectors and Railways Needed.

With regard to the mining industry, he said that there was more development in Cadwallader creek neighborhood, and more actual work in progress there than in any other part of the Province he has visited.

"Although this region has been known to mining men for the last 15 or 20 years," said Mr. Brewer, "it had fallen into disrepute, and it is only within the last two years that mining has taken a new lease of life in that region. The north arm of Seymour creek is another part of the country which is gradually recuperating after the slump caused by inefficient methods, and the advent of the railways now under construction must be a tremendous help to the industry. The mineral resources are there, and all that is needed today is transportation facilities and the necessary number of prospectors to develop the country."

HEDLEY GOLD MINING CO.'S NEW HYDRO-ELECTRIC POWER SYSTEM

On November 6 "The Hedley Gazette" published the following:

While it has been common talk about the streets that the Hedley Gold Mining Co. was about to begin the installation of a power system on Similkameen river; also that it was generally known the plant would be placed below the mouth of Twenty-mile creek. "The Gazette" refrained from making announcement without definite assurance as to details. These have, however now been practically decided upon with the mission of Mr. Mitchell of Victoria, hydraulic engineer, who was busy all last week making an inspection of the location and preparing plans.

The scheme comprises a cement dam on the river a little below the mouth of Twenty-mile creek, with a cement head-gate on the north bank of the river leading into a flume which will extend down the river for 1800 ft. to a bridge and viaduct which will carry the flume across to the other side of the river. A conduit pipe of sheet metal will be suspended beneath the viaduct which will be 200 ft. long with three trusses and fitted for a traffic bridge on top with the lower arc of the pipe suspend-

ed 5 ft. above the water at the highest known point of high water. The flume for the rest of the way will be of lumber 7 by 8 ft. and will extend down the river for nearly three miles to a point opposite Charlie Allison's place, where a power station will be put in on a plot 400 by 450 ft.

For this flume about 1,500,000 ft. of lumber will be required, while the cement to be used in the dam and at the power house will likely total about 3000 bbl. Electricity will be generated at a voltage of 6600 volts and will supply a 1500 h.p. unit.

The permission for right-of-way comprising 16 acres of Indian lands was obtained for a good sized sum, the Indians obtaining in addition the right to use all the surplus water from the spill-ways to irrigate their lands.

While Mr. Mitchell designed the system and will furnish the working plan, Mr. Knowles will be engineer of construction. It is intended to build the dam and the bridge this winter. Mr. G. P. Jones, the company's general superintendent, had arranged to put men to work this week, but he received a telegram from the president to close no contracts for labor or material until all rights have been secured and the plans approved. The directors meet in New York today and it is hoped that final instructions for full steam ahead may come to hand at any time.

While no scheme for enlargement of the mill has yet been decided on, it is generally believed that work for increasing the capacity of the mill by at least 50 per cent. will go forward hand in hand with the installation of the power plant. It is quite probable that the working force this winter on the dam and the bridge will be 100 men or more, and that the force is likely to be doubled in the spring.

What all this will mean to the town and the whole district is not easily estimated. The company has always been disposed to give local labor and local institutions the benefit of all that is going. It has been accused of bleeding the camp white and taking everything to New York, but the Similkameen valley will get the chance to supply all the lumber it can do, also the cement, and if we could manufacture waterwheels and generators there would be a show on those as well. This all supplies labor here and labor is what every camp wants. The amount of labor required to build the flume will do the town far more good than if steel piping were brought in from the manufacturing centres.

"Push It Along."

On 20th inst. "The Gazette" was able to make known the fact that construction work was to be proceeded with at once. Its news included other interesting information than that already given and here reprinted:

Nov. 17 was awaited in Hedley with more than ordinary interest, for it was understood that was the date the directors of the Hedley Gold Mining Co. would meet to decide the two momentous questions "what" and "when." These two questions were answered by

the telegram received by W. A. McLean on Monday evening 17th inst. which said:

"Directors have decided to instal power plant at once. Push it along.

G. P. Jones."

This of course bore no other interpretation to Mr. McLean than that the work to be pushed was the work he had left off on Saturday 8th inst. of which he had sufficient detailed instructions to keep his crew going for some time. Fortunately he had much of the preliminary work done, with roads made to haul material on the ground and considerable of the excavation work for the dam itself dug in the position of the river bed which is inundated at high water only; and fortunately also most of the men who had been laid off when the work was discontinued a week before, were still in camp and ready to go to work at an hour's notice.

In fact, Mr. McLean has about all the help he needs and it would be a misfortune to have men in large numbers crowding in looking for employment when only a limited number can be employed to advantage.

The dam which is to run diagonally across the river is to be 400 ft. long, with the lower end about 200 ft. long, low the mouth of Twenty-mile creek. The excavation already made has proven the beneficial effect of the slimes which have been discharged into the river from the mouth of Twenty-mile creek since the stamp-mill was started nearly 10 years ago, for it renders the gravel and sands of the river bottom impervious to water and thereby adds a most important element to the strength and security of any dam constructed in the vicinity. Where the men were digging below this argillaceous mantle formed by the slime accumulations of nearly 10 years' run, it was found to be quite dry although lower than the bottom of the channel in which the water of the river was flowing a few feet distant. The importance of this fact may be readily seen and it is the intention after the dam shall be finished to allow slimes to run into the mill pond freely for a few weeks or months to supply the protecting impervious mantle to the gravel disturbed by excavation in the construction of the dam.

In about a week or ten days more they expect to be pouring cement in the construction of the dam and it is understood that a cement-mixing machine will be here in a few days.

The dam will be of re-inforced concrete and the re-inforcement is to be done by means of a net-work of inch thick wire cable of which there is an abundant supply on hand in the miles of discarded cable that has accumulated from the operation of the gravity tramway on which a new cable is placed about every nine or ten months or as often as the cable in use is found to exhibit the slightest effect of wear. It has always been the policy of the company to take no chances with their cables as there was too much at stake to allow one to be used to anything near the breaking point. Much of this

discarded cable is now being cut up for use in the dam.

Work Again Stopped.

On November 27 "The Gazette" said: The men have again been laid off at the dam. The only reason that has been given is a telegram from G. P. Jones to "discontinue work for the present." The message came from Los Angeles, and all here are at a loss to know the cause of the delay.

VAN-ROI MINING CO., LTD.

The last report received from the head office of the Van-Roi Mining Co. in London, England, gives the following statement of operations for October at the company's concentrating mill and mine in Four-mile Creek camp: Total quantity of ore crushed during month, 1207 tons; average assay of ore, silver 5.5 oz. to the ton, lead 2.2 per cent., zinc 7.3 per cent. There was made 30 tons of lead concentrate assaying silver 107 oz. to the ton, lead 49.1 per cent. and zinc 12.6 per cent.; also 72 tons of zinc concentrate assaying silver 26.1 oz. to the ton, zinc 40.3 per cent., and lead 1.8 per cent. The total approximate value of the concentrates was \$2808. The estimated expenditure for the corresponding period was: Development \$1353, ore production \$3490, milling \$1221, total \$6064. Capital and other expenditure (insurance) was \$2759. Development work done as follows: Raise, main vein, No. 96 level: Situation 216 ft. west of Stope 1. Advance 22 ft. of which for 16 ft. ore averaged silver 14 oz. to the ton, lead 5 per cent. and zinc 11 per cent. across an average width of 21 inches. Hanging wall drift, main vein, No. 9 level: Situation about 200 ft. west of Stope 1. Advance 42 ft. of which for 17 ft. ore averaged silver 42 oz. to the ton, lead nil, zinc 32 per cent. across an average width of 33 inches.

Other development work done was 42 ft. of parallel driving. An office note gives the following information: Several new preparatory rises, necessary to be used as ore passes for the new stope which is being opened would, under ordinary circumstances, be charged to development, but as ore was obtained therefrom which more than realized its milling cost, this work was charged directly to ore production, so development charge was, consequently, reduced to \$1353.

LE ROI NO. 2, LTD.

The last report received from the head office of the Le Roi No. 2, Ltd., in London, England, gives the following statement of operations for October at the company's Josie group of mines and concentrating mill, Rossland: Shipped to Trail during month, 1800 tons of ore and 103 tons of concentrate. Receipts from smelter were \$27,960 in payment for 1626 tons of ore, and \$4015 for 141 tons of concentrate; total receipts, \$31,975. Estimated costs for corresponding period were: For development \$7000, ore production \$10,500, milling \$1250; total, \$18,750. Development work done was: Josie drift, shaft tunnel, advance 22 ft., along which length ore

more than 9 inches in width averaged gold 5 dwt. to the ton and copper 2.5 per cent. Annie drift, 500 ft. level: advance 103 ft., of which ore 29 inches in width averaged gold 3 dwt. to the ton and copper 1.5 per cent. Annie drift, 700 ft. level: Advance 38.5 ft. White Hamilton drift, 700 ft. level: Advance 52.5 ft., of which 52 ft. averaged 0.5 dwt. gold to the ton and 9.750 per cent. copper over a width of 25 inches. Josie drift, 700 ft. level: Advance 90 ft., of which for 10 ft. 7 inches of ore averaged gold 2 dwt. to the ton and copper 3 per cent. No. 37 intermediate drift, 700 ft. level: Advance 35 ft., along which length ore 18 in. in width averaged gold 8 dwt to the ton and copper 12 per cent. No. 37 raise, 900 ft. level: Advance 9 ft., along which length 28 in. of ore averaged gold 3 dwt. to the ton, and copper 4.75 per cent.

ORE RECEIPTS AT TRAIL SMELTER

Ore receipts at the Consolidated Mining and Smelting Co.'s smelting works at Trail during five weeks ended November 27 were as under:

From East Kootenay—	Tons.	Tons.
St. Eugene Mine	144	....
Society Girl Mine	20	....
Sullivan Mine	2,764	2,928
From Ainsworth Division—		
Bluebell Mine	847	....
Cork Mine	5	....
Highland Mine	714	....
No. 1 Mine	352	....
Revenue Mine	16	....
Silver Hoard Mine	134	....
Utica Mine	82	2,200
From Slocan Divisions—		
Eastmont Mine	59	....
Ottawa Mine	30	....
Rambler-Cariboo Mine	276	....
Slocan Star Mine	61	....
Standard Mine	1,053	....
Surprise Mine	54	....
Van-Roi Mine	32	1,565
From Nelson Division—		
Emerald Mine	119	....
H. B. Mine	33	....
Molly Gibson Mine	160	....
Perrier Mine	6	....
Queen Mine	45	....
Second Relief Mine	39	....
Silver King Mine	1,192	....
Stewart Mine	5	1,599
From Rossland—		
Centre Star Group	14,588	....
Josie Mine	2,062	....
Le Roi Mine	8,745	25,395
From Laradeau—		
Ajax Mine .....	....	37
From Boundary—		
Sally Mine .....	....	20
From Kamloops—		
Iron Mask Mine .....	....	232
From State of Washington—		
Ben Hur Mine	2,953	....
Bonanza Mine	140	....
Hope Mine	153	....
Imperator Mine	27	3,273
Total		37,249

HEMATITE ORE IN NICOLA VALLEY

Recently the Merritt "Herald" said: Two miles from Nicola up the Quilchena road until you come to the ranch of Mr. Hazelhurst, and then one mile up the gulch immediately behind this farm residence there are now being worked five claims upon which the work so far done has shown a good-sized deposit of red hematite ore. This is the only deposit of this class of ore that has ever been found in Nicola valley and in fact, it is the only one known in Western Canada. Red hematite ore is

used in the manufacture of steel and is one of the most important ores there is.

Analyses of samples taken from these claims show it to be a good iron ore. In fact, there is no better ore known.

The properties are owned by Mr. A. W. McVittie, of Merritt, who has a number of men now doing considerable development work upon them.

One of the crying wants of the Pacific coast today is an iron and steel industry. Capable men backed with ample capital have been engaged for a number of years endeavoring to handle the large deposits of magnetite ore found at various points in large quantities, but so far without success, as there is no known process of using magnetite ores successfully without the addition of a large percentage of red hematite of the character found on Mr. McVittie's claims.

MINING ON WEST FORK OF KETTLE RIVER

The following information concerning mining on Wallace mountain, west fork of Kettle river, has been taken from the Vancouver "World":

On Wallace mountain, about 50 miles up the west fork of the Kettle river, above Midway, are a number of mining properties which have in the past attracted more or less attention on account of the high-grade character of their ores, but which through lack of adequate transportation facilities have been worked only in a desultory manner, though the records show that more than 2,000 tons of ore have been shipped from this mountain by trail, wagon road and railway.

Most prominent of the Wallace Mountain properties is the Sally mine, recently acquired by a Victoria syndicate from the Vancouver and Boundary Creek Mining and Development Co., and which, under the superintendency of Alex. Robinson, who has resided in Vancouver for the past two years, has again been put on a shipping basis. Mr. Robinson, who is down on a business trip, stated that a carload of ore which was shipped just before he left, will, according to assays, run more than \$100 per ton in value, and that a wagon haul of only two and one-half miles is now required to take the ore to Kettle Valley railway.

The Sally group consists of 13 claims and fractions, and on these occur four well defined veins. Tunnels have been driven on these veins, the total amount of work amounting to more than 3,000 ft. Above the tunnels on two of the veins, the ore has been stoped out, but above the other two tunnels there is virgin ground. The present management is driving a new tunnel to tap the most important ore shoot on the property, and some interesting developments are expected shortly. Meanwhile, shipping ore is being taken from the old workings.

Mr. Robinson, for the syndicate, has extracted and shipped 10 tons of ore from an adjoining property belonging to Mr. Ralph Smailes, formerly of Greenwood but now livink in Seattle.

The result of the shipment is satisfactory, so it is more than likely the Smalles property will be acquired by the syndicate and added to its Wallace Mountain holdings.

"I look for a general revival of interest in mining within the next few months," said Mr. Robinson. "The fact that this is the best paying industry in the province, although the mineral resources have not been fully developed, should give investors something to think about. While there are but a few dividend paying mines to produce the millions of dollars annually which the government returns report, there are many properties with surface showings equal in extent and value to those which have been developed into money makers. It remains for investors to furnish sufficient capital to put the properties on which these showings occur on a profit-making basis, and make them attractive to capitalists financially able to bridge the chasm which always exists between the 'prospect' and the 'mine' stage of every property.

"I believe that within the next year or two the west fork of Kettle River will go ahead as a factor in the mineral production of the province. While I am engaged solely in opening the Sally mine, I know that this is only one of many properties in the district which have the makings of mines. There are numbers of promising properties on Wallace Mountain alone, including the Rambler, Bounty and Bounty Fraction, which have shipped a considerable amount of ore, and Wallace Mountain does not by any means comprise the whole of the west fork district.

"On the opposite side of the river are the Carmi, Butcher Boy and others, from which shipments totalling more than 1,000 tons have been made, the ore having been hauled 57 miles to Midway. In view of the fact that the Kettle Valley Railway now passes through this entire region, the district has an opportunity of coming to the front, and from present indications there will be in the near future, great activity at its mining camps.

"The syndicate owning the Sally mine has been organized strictly for practical mining, and it is financially able to provide all the funds which may be required. There will be no stock placed on the market."

The Canadian Mining & Exploration Company next year will spend a large amount in development work in British Columbia.

Men are working day and night at the Standard mine at Silverton in efforts to get under way 2,500 tons of zinc ore which is being shipped to Argentine, Kan., for treatment. The shipments are being rushed as the ore is piled up in the open air and the company desires to move it before the frost sets in. The ore was piled to await the definite decision as to the new United States tariff, under which a reduction in duty was made, which is proving of considerable benefit to British Columbia zinc producers.

PERSONAL AND GENERAL

Movements and News of Prominent Mining Men

Written for the B. C. Mining
Exchange by E. JACOBS

Mr. A. D. Acland, Dominion Deputy Minister of Labor, has returned East after having been at Nanaimo endeavoring to bring about an agreement between the mine owners and the coal miners who have been on strike since May 1st of the current year.

Mr. M. W. Bacon, of Butte, Montana, U.S.A., has again been to the group of mineral claims in the northern part of Vancouver Island on which Mr. Conrad Wolfle, of Spokane, and associates, have a bond. Mr. Bacon, who is general manager for the Stewart Mining Co., operating the Stewart mine in the Coeur d'Alene district, Idaho, has contradicted some extravagant reports that had been published in a number of newspapers, which included an assertion that either the Stewart Mining Co. or Mr. F. August Heinze had purchased the Old Sport group for \$500,000. Mr. Bacon and associates have a long-term lease and bond on some of the claims that The Wolfe syndicate had previously been prospecting, and they have about a dozen men employed on them. It is intended to do development work throughout the winter.

Mr. Chas. A. Banks, manager of the Jewel-Denaro Gold Mines, Ltd., returned to the Jewel mine, near Greenwood, Boundary district on November 21, after having been East for a time. Beside examining a graphite property in the Province of Quebec, Mr. Banks paid a visit to New York City. During his absence from the Boundary Mr. H. D. Quimby was in charge of the Jewel mine and stamp-mill.

It is reported that Mr. R. Randolph Bruce, of Wilmer, East Kootenay, who some years ago was manager of the Paradise mine, in Windermere division, is to be married next January to Lady Elizabeth Northcote. Mr. Bruce has been resident in East Kootenay for many years, and is well known in connection with the development of the upper Columbia river district.

Mr. Lorne A. Campbell, M.L.A., manager of the West Kootenay Power and Light Co., has returned to Rossland from a trip to Montreal, the "Star" newspaper of which city recently said: "The West Kootenay Power and Light Co. has declared a dividend of 1-4 per cent. for the quarter on the common stock, payable December 1, to shareholders of record November 4. This places the stock of the company on a five per cent. annual basis."

Mr. F. B. Chettleburgh, well known in Telkwa district, Omineca mining division, was married on October 31, in Vancouver, to Miss Grace Day of that city. Mr. and Mrs. Chettleburgh afterwards went north, to their new home at Telkwa.

Mr. P. M. Collins, of Butte, Montana, is in charge of construction and equip-

ment of the concentrating mill the first unit of which is now being put in at Boundary Falls. The British Columbia Copper Co. is installing the plant for treatment of ore in its Lone Star and Washington mine, situated just across the International Boundary line south of Central camp and in the State of Washington. The sorted crude and ore and concentrate from this plant will be smelted at the company's works at Greenwood.

Mr. A. W. Davis, of the Consolidated Mining and Smelting Co.'s mining engineering staff, is in charge at the company's Group mine, near Marysville, East Kootenay, during the absence of the superintendent, Mr. C. H. McDougall, who has for several weeks been in a hospital in Montreal, Quebec, incapacitated from work by a bad knee.

Dr. Chas. W. Drysdale, of the Geological Survey of Canada, who had been for six months engaged in continuing the structural survey of Rossland camp on which Mr. R. W. Brock spent much time several years ago, has left Rossland on his return to Ottawa. He was accompanied by Dr. B. Rose, also of the Survey, who for two or three months had been assisting him.

M. A. R. Finland, for several years resident in Vancouver, has been at Silverton, Slocan lake, for several weeks, in the vicinity of which place he has mining property.

Mr. Donald G. Forbes, of Victoria, has gone to England for the winter. During the field-work season of this year he was engaged in making investigations in connection with the progress of the mining industry in various parts of the Coast district and latterly in preparing reports on same for the provincial Department of Mines.

Mr. J. D. Galloway, acting assistant to the Provincial Mineralogist, has returned to Victoria from a trip to Summit camp, Tulameen district, and thence through the Similkameen valley to Boundary district. In the course of his trip he obtained information relative to mining properties in various camps he visited.

Mr. Ronald Harris, who some years ago was resident in Boundary district, whence he went to South Africa, has this year been engaged in developing a gold-mining property in the Knik district, Alaska, for a Montreal mining man.

Mr. Arthur Hickling, of London, England, managing director of the Princeton Coal and Land Co., has been visiting the company's coal mine and other property near Princeton, Similkameen.

On November 27, the Hedley "Gazette" said: Word received from Mr. G. P. Jones, who went to attend the meeting of the Hedley Gold Mining Com-

ppany's directors, was to the effect that he was coming back by way of Los Angeles, presumably accompanying Mr. I. L. Merrill, the president, whose home is in Los Angeles and who would doubtless be returning there after the meeting. Mr. Jones planned to come back by way of Victoria and the date upon which he expected to be there would make it impossible for him to be back here before the first of December, and it will in all probability be a few days later than that.

The "Portland Canal Miner" states that James Lade has gone to Victoria, where he expects to spend the winter. Mr. Lade is interested in the L.L. & H. group, one of the best known properties on Bitter creek. During the past season he was in charge of the construction of a wagon road up the creek.

Friends on the Coast of Mr. Douglas C. Livingston, now a professor in the mining engineering department of the University of Idaho, Moscow, Idaho, will regret to learn that he has lost his young son, the child having died lately.

Mr. Wm. Keddy, who has been prospecting in the neighborhood of Lillooet river, reports, says "The Prospector," that he has discovered what he believes to be a valuable zinc deposit. It is situated on the west side of Lillooet lake and about one mile from the mouth of the upper Lillooet river. A large body of ore is represented, the ledge being from 20 to 40 ft. in width and extending a distance of 4,000 ft. Samples of the ore are now in the hands of an analyst. Mr. Keddy staked five claims, which are situated about six miles from the line of the Pacific Great Eastern railway. There is a good wagon road for about five miles.

Mr. H. F. McRae, Prince Rupert, was a recent visitor in Stewart, says the "Portland Canal Miner," in the interests of a Rupert syndicate who have acquired a mountain of granite on Smith Island near Prince Rupert. The syndicate is now arranging for machinery such as derricks, rock crushers, rolls, etc., and it will soon be in a position to deliver to Prince Rupert the highest grade building stone, crushed rock and sand for building purposes.

Mr. Anthony J. McMillan, liquidator of the Le Roi Mining Co., was recently recalled to England, owing to the serious illness of his only son and child. Mr. McMillan had been in the East a short time, investigating the affairs of the Londonderry Iron Co., for which corporation he had not long since been appointed receiver.

Mr. E. G. Montgomery, assistant superintendent of the Centre Star group on a vacation trip to Montreal and of mines at Rossland has gone East lower Quebec.

Mr. J. W. D. Moodie, vice-president and general manager of the Britannia Mining and Smelting Co., has been in New York. He is expected to return to Britannia Beach about the middle of December.

Mr. F. T. Newton, who has had charge of the diamond drill work for

the Granby Consolidated Co. at Hidden creek, Observatory inlet, has been in Phoenix, Boundary district, conferring with Mr. Page Boyle, superintendent of all diamond drilling on the company's properties.

Mr. W. W. Rush, who has mining interests in Portland Canal mining division, has gone to Kassan, Prince of Wales island, southeast Alaska for several weeks.

Mr. A. C. Seaton, formerly with the Nicola Valley Coal and Coke Co., has been appointed assistant superintendent at the Corbin Coal and Coke Co.'s Colliery in southeast Kootenay.

Mr. Chas. H. Stewart, of Messrs. Alexander Hill & Stewart, mining engineers, London, England, is due to reach Rossland early in December, and later to visit the Van-Roi mine. The firm operates mines in various parts of the world.

Mr. R. H. Stewart, general manager for the Consolidated Mining and Smelting Company of Canada, has gone on a visit to Los Angeles, California. He will shortly go East to attend the company's annual meeting.

On Oct. 3, the "Omineca Herald," included the following in its local news: "Mr. W. Sullivan, a mining expert from Butte, and Mr. Patrick Clark, Jun., of Spokane, arrived in the district last Saturday night in company with Mr. H. W. C. Jackson, publicity man for the New Hazelton District Mine Owners' Association, who met them at Prince Rupert at the fair. They went Saturday night to the Rocher Debole mountain, where the party spent Sunday, and got to town Monday noon. Tuesday morning they started early for the Silver Standard mine and Harris mines where they spent the night and Wednesday morning went up to the top of Nile mountain where they spent the day, arriving in New Hazelton again on Thursday. They expect to leave on the train for the Hudson Bay mountain where they will look over the Coronado group which is owned by McDonell and associates. Both Mr. Clark and Mr. Sullivan were very much impressed with the New Hazelton district mineral properties. It was for the purpose of looking them over with a view of becoming interested that they made the trip here at the invitation of Mr. Jackson. They will be in this part of the country for some days longer."

Prof. Francis A. Thomson, of Pullman, Washington, head of the mining engineering department of the State College of Washington, has been appointed acting dean of the faculty of that institution.

Mr. N. Thompson of Vancouver, who is the British Columbia representative of Cammell, Laird & Co., the English steel manufacturers, and who was in Hedley lately on his annual trip through the district, is an old-timer in the province, says the "Gazette." His firm supplies the shoes and dies which have been stamping out the gold in the Hedley Gold Mining Company's stamp mill for several years past and he likes to come around every year to see a

live camp and note how his firm's product is doing its work.

Mr. R. P. Trimble, Portland, Ore., states the "Omineca Herald," has started action against the Rocher de Boule Copper Co., of Butte, whose holdings are on the Rocher de Boule mountain, New Hazelton. The action is to set aside the lease granted to J. E. Oppeheimer on the ground of fraud; for the appointment of a receiver and for an accounting of the company's affairs. The action is being taken in the Supreme Court of British Columbia at Victoria.

Mr. John Vallance, of New Denver, late superintendent of the Standard silver-lead mine, near Silverton, Slocan lake, has gone on a visit to one of his sons, who is a resident in Montana.

Mr. T. J. Vaughan-Rhys, of Stewart, Portland canal, has been examining mineral claims in Hazelton district, Skeena.

Mr. E. E. Ward, formerly superintendent of the Silver Hoard mine, in Ainsworth camp, has been looking over mineral claims in the Lardo-Duncan district.

Mr. R. T. Ward, for a long while associated with placer mining at Harper's camp, Quesnel mining division, is reported to have leased the Guggenheim property in the vicinity of Bullion, on which the late Mr. John B. Hobson worked in bygone years. Mr. Ward went up to Bullion in October.

Mr. E. H. Williams, assayer for the Hedley Gold Mining Co., expects to leave for England about the beginning of December, says "The Gazette." He has been having trouble with his eyes and will seek the aid of a specialist before he returns.

Mr. Frederick R. Weekes has returned to New York City after having been for more than a year resident engineer at the Copper Mountain mining properties, Similkameen, which the British Columbia Copper Co. and allied interests have been developing under option of purchase. He continues as supervising engineer, in which capacity he will visit Copper Mountain camp periodically.

Mr. Charles Wekell, master mechanic at the Granby Consolidated Co.'s smelting work at Grand Forks and Miss Amy K. Matheson of the same town, were married recently at Republic, Washington.

Dr. Wesbrook, president of the newly organized University of British Columbia, has arranged to deliver an address before the Vancouver Chamber of Mines on a subject bearing upon the relation of the university's activities to the mining industry.

The "Slocan Record," New Denver, states that Mr. W. R. Will has gone to Ontario to spend the winter. He has secured a lease for three years of the interests of his partners in the Capella, Goat mountain, near New Denver, and in the spring will put a force of men to work on the property. Some of the richest ore mined in the district was taken out of the Capella years ago.

Mr. Fred W. Wells, of Vancouver, has been to one of the tributaries of the north fork of Bridge river, Lillooet district, to examine some mineral claims for residents of Lillooet.

Mr. W. P. White, who some years ago was superintendent of the St. Eugene lead mine, at Moyle, East Kootenay, now representing the Interstate Rubber Co., of Spokane, was a recent visitor to Boundary district mining camps.

Another news item from the "Slocan Record" follows: "Three old-timers have returned to the Slocan: Eli Carpenter's carbine, also the prospect pick with which he broke float on the first mineral location made in the Slocan. The pioneer grindstone also returned. These articles can be seen at the Newmarket hotel, New Denver, where they are deposited after a nine years' absence from the camp."

Mr. W. B. Zwicky, of Kaslo, for years manager for the Rambler-Cariboo Mines, Ltd., and who was responsible for that company's mine in McGuigan basin being successfully developed to a considerable depth, has been on a business visit to Winnipeg, Manitoba.

In its "Personal" columns, "The Mining Magazine," London, makes mention in its October number of several men at one time or another connected with mining in British Columbia, Mr. W. A. Carlyle, who was provincial mineralogist for British Columbia in 1896-7 and afterwards manager of some of the larger mines in Rossland camp, left London on September 20 on a visit to South Africa. Mr. Walter G. Perkins, at one time chemist for the Granby Consolidated M. S. and P. Co., at its smelting works at Grand Forks, Boundary district, was going to Korea by way of Siberia. The successor of Mr. A. L. Dean, in the late nineties metallurgist at the Trail smelting works, and since then metallurgist to the Mt. Lyell Co., operating in Tasmania, who recently resigned the latter position, is Mr. Robert P. Roberts, of Great Falls, Montana. Mr. Ernest R. Works, in 1899-1903 actively associated with mining in Ainsworth, Slocan, and Nelson districts, has gone to Asia Minor. The London "Mining Journal" mentioned on October 18, that Major Frank Johnson, chairman of the Ptarmigan Mines (British Columbia), had returned to London after a visit of inspection to that company's property, which is in Alberni district, Vancouver island.

The "Spokesman-Review," Spokane, recently published a despatch from Kalispell, Montana, as follows: "The chamber of commerce returned today from an excursion to Fernie, B. C. The trip was made to try out the new Kalispell-Fernie train, which was put on about the middle of the month, and also to get better acquainted with the Canadian people. Delegations from Columbia Falls, Eureka and Elko joined as the train passed through those places. A smoker was tendered by the Fernie board of trade last evening and through the courtesy of W. R. Wilson, general manager for the Crow's Nest Pass Co., and Herbert Black, superintendent of the Fernie, Morrissy and Mi-

chel Coal and Railroad company, a visit was paid to the mines of that company this morning."

The Vancouver "Daily Province," on Oct. 23 included this paragraph in its general news:

Unbounded confidence in the future of the new goldfields at Chisana, was expressed yesterday by "Billy" James, discoverer of the strike, who arrived from the north on Monday. Discussing the recent criticisms of prospectors who returned disappointed from their quest for gold in the Chisana district, the miner gave it as his opinion that claims just as good as the James and other claims nearby were to be located in the camp, and also that the newly discovered goldfields extended into Canadian territory. Mr. James said that he was convinced that thorough prospecting would prove the existence of the precious metal in paying quantities at bedrock in the Yukon close to the International Boundary, if proper working appliances were utilized. The discoverer left yesterday for Seattle. He intends to spend the winter in California. He stated that he had bonded the James claim to a syndicate who will develop it on a large scale."

REVISED TARIFF FAVORS B. C. ORE.

The new customs tariff on lead and zinc taken into the United States is as follows:

Lead in bullion, 25 per cent. ad valorem—about 1.09 cents per lb.

Lead in ore, 3-4 cents per lb. on lead contents thereof.

Zinc in bullion, 15 per cent. ad valorem.

Zinc in ore, 10 per cent. ad valorem—about six-tenths of a cent per lb.

Mr. H. W. C. Jackson, of New Hazelton, has been informed by a banker friend in Montana that the reduction of the American customs duties to the above figures will materially help Canadian producers of these metals. It may be expected to compel the Consolidated Co., owning the Trail smelter sooner or later to adopt the Montreal instead of the London price as the settlement basis for lead, as otherwise a considerable tonnage from British Columbia lead mines will go to the American smelters. The reduced duty on zinc will better enable American smelters to handle high-grade zinc ores from this province, especially such as contain good silver values.

UNCOMMON MINERALS.

(Continued from page 8.)

In conclusion, It may be pointed out that the foregoing notes simply serve to indicate the possibilities of the Ainsworth-Slocan district in regard to occurrences of rare or uncommon minerals. There may be, and probably are, many other minerals not yet discovered here. It is desirable that whenever any mineral new to the district shall be found, the fact of its occurrence here shall be communicated to the Dominion and Provincial Departments of Mines so that there may be official records made of its presence in this part of Canada.

STANDARD MINE LISTED ON NEW YORK CURB

The Spokane Spokesman-Review of the 7th inst. says: Application has been made to list the Standard Silver-Lead Mining Company, the Finch-Campbell Estate-Clark Corporation, operating the Standard mine at Silverton, B. C., on the New York curb, and a representative of the company will leave for the east soon to perfect final details. It is anticipated that this will have a tendency to increase the popularity of the issue and in local brokerage circles there has been a quiet effort to secure extensive blocks of the stock ever since those on the inside learned that plans were formulated to place the shares on the eastern market.

The Standard Company, capitalized for \$2,000,000, was organized in 1910 and began disbursing dividends within a few months after operations were begun at the property, high-grade ore being encountered practically at the surface. To date the dividends aggregate \$925,000, and another declaration of \$50,000 is due November 10, making \$975,000, almost the capitalization, turned back to the stockholders in a little over two years, in addition to a surplus of \$271,665 reported on hand when the last report was made on October 1, an increase of \$105,878 since January 1, 1913.

TREATMENT OF ZINC-SILVER ORES.

The "Slocan Record," New Denver, quite recently printed the following notes relative to the treatment of the zinc-silver ores of the parts of Ainsworth, Slocan, and Slocan City mining divisions, usually designated Slocan district. The initials at the end suggest that Mr. Wm. Thomlinson, of New Denver, is the contributor, for he has many times contributed for publication interesting observations concerning the ores of that district:

"An effective method of treating economically the rich zinc-silver ores of Kootenay is indeed desirable and of much commercial importance.

"In the district lying between the north half of Kootenay lake and Slocan lake there are more than twenty developed mining properties which, in addition to other ores, or entirely, contain large quantities of rich zinc-silver ore.

"In the district referred to the zinc and silver contents of these ores range from 20 to 55 per cent. zinc and from 15 to 250 oz. silver a ton.

"Thousands of tons of such ore is on the dumps or in the stopes of Kootenay mines awaiting shipment to a metallurgical plant where penalties on zinc and heavy losses of silver will be avoided.—W. T."

The Granby Consolidated Co. is putting in a new water supply system in connection with its copper smelting works at Grand Forks. A reservoir has been constructed at a higher level than that of the works and connection made by pipe-line with a small lake in the mountains, distant a mile and a half from the smeltery. The supply of water will be practically unlimited, and the pressure high.

Our Mines

in 1913

THE DECEMBER NUMBER OF THE B. C. MINING EXCHANGE WILL CONTAIN A COMPLETE AND EXTENSIVE REVIEW OF THE PROGRESS OF THE VARIOUS MINING DISTRICTS OF BRITISH COLUMBIA DURING THE PAST YEAR, FROM THE PEN OF MR. E. JACOBS.

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VANCOUVER, B. C., NOVEMBER, 1913

EDITORIAL.

In the present issue some interesting particulars are given of the development of the oil resources of Alberta. Putting aside the inevitable tendency to inflation of values, which appears to be a necessary accompaniment of any new movement in the natural resources of Western Canada, there is no cause for doubting that the oil industry in Western Canada is going to be a factor of enormous importance in the industrial and commercial growth of the country at a very early date. From the consensus of opinion expressed by the leading authorities, the oil, in commercial quantities at any rate, lies at considerable depth, but all available indications would seem to confirm the presumption that it does exist at those depths. In that case, it may be assumed with confidence that capital will enter into the field of development. In the meantime, the Calgary Board of Trade has issued a warning against over-speculation in oil properties, and it may be well, for the benefit of our readers in the United States, to remind them that reliable information as to the prospects of the oil industry and the standing of companies dealing in oil properties, may be procured on

application to the provincial authorities of British Columbia and Alberta. There will without a doubt be a considerable movement in the direction of oil exploitation in both these provinces with the advent of spring, since the evidences of the presence of oil are too numerous and well-authenticated to be overlooked or denied, and this great addition to the wealth of the West will naturally engage the attention and energies of the bogus promoter as well as the bona fide operator. The next few years will in all human probability see many millions made out of the oil of Western Canada. The investing public should see to it that it avails itself of reliable information before purchasing stock.

The listing of the Standard Mine (Silverton) on the New York curb is not merely an exceedingly gratifying thing in itself, but calls attention to the fact that the present year, in spite of the artificial financial stringency, has seen a heavy increase in the dividend-paying figures of many of the mines in the interior. This is an excellent indication of the sound basis of profitable production upon which our banner industry rests, and the profits in the future may be confidently expected to show a very large increase on the present satisfactory figures.

In another column some noteworthy details are given of progress at the Britannia mines on Howe Sound, some twenty-eight miles from Vancouver. The manner in which, under capable management this property is now being brought to the front is worthy of the close study of the many who are owners of, or interested in, the various mineral showings which are a feature of all the districts bordering on the sea-coast of British Columbia. The general public has far too little knowledge of the valuable character, as a future mineral producer, of a great proportion of the districts immediately tributary to Vancouver; but those who are in a position to judge do not hesitate to say that a very few years will see the Terminal City the central point of one of the biggest mineral-producing sections of the Pacific Coast.

We are in receipt of several communications desiring to know why so much prominence was given in the columns of our October issue to the punishment of the men concerned in the recent troubles in the coal districts of Vancouver Island. The answer is plain—these troubles were the result of an organized plot, in which the more ignorant sections of the laboring classes were made the tools of their leaders, men who in turn

were in the pay of men who desired to check the development of a most important industry. The men thoroughly deserved the punishment they got, and it is most desirable that all possible publicity should be given to the fact that the enforcement of law and order in this province is something that the decent sections of the community can depend upon. That the action of the authorities has the hearty support of this class is evidenced by the increase in military units throughout the province which has been a remarkable feature of the past few months. The agitator and the hired law-breaker—no matter under what specious guise of words they may cover their cowardly trade—are going to be taught that the industrial development of British Columbia is not going to be allowed to lie at their mercy.

Judging from the evidence given of the stoning of women and children in the trials of the striking miners, and the support which the proceedings of these individuals have received—now that the bayonets are sheathed for the time—from the leaders and organizations responsible for the trouble, it would appear to be the opinion of organized labor in British Columbia that the hand which "rocks" the baby ought to be the hand which rules the world.

Mr. N. Thompson of Vancouver who is the British Columbia representative of Cammell, Laird & Co., the English steel manufacturers, and who was in Hedley last week on his annual trip through the district, is an old-timer in the province, says the Hedley Gazette of the 6th inst. His firm supplies the shoes and dies which have been stamping out the gold in the Hedley Gold Mining Company's stamp mill for several years past and he likes to come around every year to see a live camp and note how his product is doing its work.

The Noble Five mine near Sanden has closed down for the winter. A number of men are engaged on the deep level tunnel which is being run from near the old Sovereign ground.

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LATEST METAL MARKETS.

(From Chicago Mining & Engineering World.)

Silver.—Quotations at New York for bar silver per fine ounce and at London per standard ounce for the week ending Nov. 25, were as follows:

	New York	London
	Cents	Pence
Nov. 19	59	27½
Nov. 20	58½	27
Nov. 21	58½	26 13-16
Nov. 22	58½	26½
Nov. 24	58½	26½
Nov. 25	58½	27 1-16

MONTHLY AVERAGE PRICES OF SILVER

	New York			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	63½	61½	62.928	56.259
February	62½	58½	61.625	59.043
March	59½	56½	57.969	58.360
April	60½	57½	59.540	59.265
May	60½	59½	60.360	60.754
June	60½	58½	58.975	61.265
July	59½	58½	58.423	60.615
August	59½	59	59.27	61.600
September	61½	59½	60.650	63.364
October	61½	59½	60.807	63.540
November	61½	59½	62.750	63.390
December	61½	59½	63.390	
Year	61½	59½	60.837	

Copper—Copper prices had a downward tendency last week. In Europe American electrolytic dropped to £70 and European selections to £69 10s, but apparently very little business was encouraged by the lower prices and the undertone of the market is still weak, with prices entirely nominal.

Standard copper at London was irregular, weak and lower, the net break being £1 15s on spot and £2 2s 6d on futures. Best selections of European copper broke £2 10s, closing at £69 10s net. The drop in American electrolytic abroad was £1 10s.

There were exports of copper during the week on old contracts, or the transfer of surplus metal to the European warehouses. The total foreign shipments during the week ended Nov. 20 were 8367 tons and since Nov. 1 20,734 tons, which is at the rate of over 1000 tons per day. It is evident that with consumption heavily reduced in Europe much of this metal must go into surplus stock abroad. European statistics take small account of copper exported from the United States, counting all American shipments as deliveries into consumption.

But little business was done in standard warrants at New York. Prices, while one-half cent a pound lower than the preceding week were entirely nominal at about 14½ cents at the close of the week for any delivery within the next 60 to 90 days.

Quotations for copper per pound at New York and per long tons of 2240 lbs. at London for the week ending Nov. 25, were as follows:

	Lake	Elec	Cast	Standard	London
Nov. 19	16½	15½	15½	15½	£68 7 6
Nov. 20	16½	15½	15½	15½	67 10 0
Nov. 21	15½	14½	14½	14½	66 5 0
Nov. 22	15½	14½	14½	14½	66 5 0
Nov. 24	15½	14½	14½	14½	65 0 0
Nov. 25	15½	14½	14½	14½	66 7 6

MONTHLY AVERAGE PRICES OF COPPER

	New York—Lake Superior			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	18	16½	17.116	14.526
February	16½	15½	15.	14.606
March	16½	15½	16.306	14.911
April	16½	15½	16.731	16.092
May	16½	15½	15.956	16.391
June	16½	14½	15.445	17.612
July	16½	14½	14.770	17.536
August	16½	15½	15.697	17.694
September	17	16½	16.857	17.724
October	17½	16½	16.996	17.753
November	17½	16½	17.750	
December	17½	16½	17.750	
Year	17½	16½	16.695	

MONTHLY AVERAGE PRICES OF LEAD

	New York—Electrolytic.			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	17½	16½	16.983	14.425
February	16½	15	15.717	14.435
March	16½	15½	15.065	14.853
April	16½	15½	16.620	16.003
May	16	15½	15.896	16.326
June	16½	14½	15.203	17.505
July	16½	14½	14.646	17.418
August	16½	15½	17.787	17.694
September	17	16½	16.800	17.706
October	17	16½	16.786	17.745
November	17	16½	17.750	
December	17	16½	17.750	
Year	17	16½	16.634	

Tin—Tin was unsettled last week with declining prices. Futures were weak and at the close of the week were offered at concessions from the spot basis. American deliveries during the current month are not expected to be much over 3000 to 3200 tons, although higher estimates cabled from London during the week temporarily stimulated that market. The arrivals at the United States ports since Nov. 1 have been 1737 tons and 700 tons more will come in before the first of the month. The indication is that there will be a decrease of from 500 to 600 tons in surplus stocks at New York, but there will be a heavy increase in stocks abroad, due to the release of Banca tin through the auction.

The London market for standard contracts was heavy, weak and lower and more or less irregular with very moderate transactions. The net decline for the week was 17s 6d on spot and £1 12s 6d on futures.

Quotations for tin at New York and at London for the week ending Nov. 25, were as follows:

	New York		London	
Nov. 19	40.35—40.05	£182 15 0	181 15 0	
Nov. 20	40.25—39.75	181 5 0	180 5 0	
Nov. 21	40.25—39.80	180 15 0	180 5 0	
Nov. 22	39.85—39.25	179 15 0	179 0 0	
Nov. 24	39.65—39.25	179 15 0	179 0 0	
Nov. 25	39.50—39.20	180 0 0	179 0 0	

MONTHLY AVERAGE PRICES OF TIN

	New York			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	51.25	49.50	50.414	43.275
February	50.30	47.30	48.738	43.345
March	48.50	45.62½	46.844	42.690
April	50.25	47.37½	49.075	43.970
May	50.75	47.10	49.15	46.055
June	46.75	42.50	45.071	48.046
July	47.75	38.75	40.349	44.665
August	42.80	40.55	41.561	45.849
September	43.87	40.75	42.377	49.232
October	41.37	39.75	40.425	50.073
November	41.37	39.75	40.425	49.869
December	41.37	39.75	40.425	49.899
Year	41.37	39.75	40.425	46.330

Lead—Lead was dull and easier and largely nominal for spot. On call at the New York Metal Exchange spot, November and December offered at 1.35 cents, with 4 1-4 cents bid for each position on Friday. On call at East St. Louis spot, November and December of-

fered at 4.15 cents, with 4.10 cents bid for each position on Friday.

London declined 2s 6d net last week. Spanish closed at £18 17s 6d, against £19 on the preceding Friday.

Quotations for lead at New York and at London for the week ending November 25, were as follows:

	New York	London
	Cts. per lb.	Per Ton
Nov. 19	4.35—4.25	£19 2 6
Nov. 20	4.35—4.25	19 2 6
Nov. 21	4.35—4.25	18 17 6
Nov. 22	4.35—4.25	18 17 6
Nov. 24	4.35—4.25	18 17 6
Nov. 25	4.35—4.25	18 15 0

MONTHLY AVERAGE PRICES OF LEAD

	New York			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
January	4.37½	4.25	4.301	4.435
February	4.35	4.25	4.30	4.068
March	4.40	4.25	4.340	4.167
April	4.45	4.30	4.381	4.213
May	4.55	4.25	4.418	4.164
June	4.40	4.25	4.336	4.395
July	4.50	4.30	4.355	4.669
August	4.85	4.45	4.740	4.581
September	4.75	4.60	4.692	5.071
October	4.75	4.25	4.426	5.088
November	4.75	4.25	4.433	
December	4.75	4.25	4.430	
Year	4.75	4.25	4.482	

Spelter—Spelter was dull and weaker in west but better sustained here. On call at the Metal Exchange spot, November, at 5.30 cents, with 5.20 cents bid for each position on Friday. On call at the Metal Exchange for East St. Louis spot, November and December offered at 5.15 cents, with 5 cents bid for each position, including January, on Friday.

London was steady. G. M. B. closed at £20 12s 6d, the same as on the preceding Friday.

Quotations for spelter at New York and at London for the week ending November 25, were as follows:

	New York	London
	Cts. per lb.	Per Ton
Nov. 19	5.30—5.20	£20 15 0
Nov. 20	5.30—5.20	20 12 6
Nov. 21	5.30—5.20	20 12 6
Nov. 22	5.30—5.20	20 10 0
Nov. 24	5.30—5.20	20 10 0
Nov. 25	5.30—5.20	20 10 0

MONTHLY AVERAGE PRICES OF SPELTER

	New York			
	1913	1913	1913	1912
Month.	High.	Low.	Avg.	Avg.
Jan.	7.40	6.40	7.192	6.505
Feb.	6.80	6.15	6.406	6.541
Mar.	6.45	5.70	6.222	6.817
Apr.	5.95	5.45	5.712	6.799
May	5.55	5.25	5.477	6.85
June	5.35	5.00	5.169	7.011
July	6.65	4.30	5.279	7.229
Aug.	5.95	5.55	5.760	7.042
Sept.	5.95	5.60	5.820	7.553
Oct.	5.70	5.25	5.411	7.550
Nov.	5.70	5.25	5.411	7.429
Dec.	5.70	5.25	5.411	7.331
Year	7.40	5.25	7.053	26.317

For the year to date the shipments of zinc ore and concentrates from the Slocan total 3,767 tons.

Zinc shipments from mines in the Slocan districts during October totalled 903 tons, the heaviest shipper being the Rambler-Cariboo, which sent 680 tons to Bartlesville, Okla. Other properties shipping were the Van Roi, 69 tons to Bartlesville; the Standard, 40 tons to Bartlesville; the Lucky Jim, 30 tons to Deque, Ill.; the Hewitt, 30 tons to Bartlesville; the U. S., near Whitewater, 30 tons to Bartlesville, 33 tons to Argentine.

Coast and Island Mining

Latest News from Portland Canal—Satisfactory Progress of Work of Portland Canal Tunnels, Ltd.—Mines Around Hazelton Continue to Show Up Well—Excellent Conditions at Britannia Mine, Howe Sound—General News

COAST MINING.

Portland Canal Division.

Among its mining news for November, the "Portland Canal Miner," included the following:

Indian Mines—Manager Geo. Clothier states that the upper tunnel has reached a distance of 370 ft. and the lower is in more than 60 ft. Good reports continue to come from the property, as in both adits there is galena of excellent grade.

Lakeview—This property has for several weeks past been undergoing surface development at the hands of the owner, James McKay, with most satisfactory results. The "Prince George" took south a test shipment of three tons to Tacoma smelter and from a careful sample made by Assayer George E. Clothier, it is expected that the ore, which is a galena containing high-grade silver, will easily run over \$100 to the ton. The ore came from the surface, and it is more than likely as a result that work will be continued this winter.

Fish Creek Mining—Development was suspended for the winter the end of the month and the men discharged. It was expected that another shipment would be sent out but on account of the excessive cost of handling the ore via Ketchikan the project was abandoned. The property has some high-grade silver ore with good gold value as well.

Cascade Falls—President Charles Bunting is in town, having completed the development work at the mine for the season. He is entirely satisfied with the amount of work accomplished by his crew and the showing made this year, for development has been practically continuous since last winter. He expects shortly to go to Victoria to consult with his directors.

Red Reef—Work on this property has been suspended for the season and the owner, H. E. Newton, and his foreman, T. Prisk, left for Victoria on the last boat. Considerable work has been accomplished this year, including the extension of the main tunnel to the 300 ft. mark and then a 40 ft. drift to the south, in addition to considerable surface work. About 6 ft. of copper ore was crosscut in the main tunnel and it is the intention of the owner to drift on this as soon as possible in the spring. Mr. Newton will also in all probability put in a diamond drill with a view to determining the extent of values of the orebodies at greater depth.

Swamp Point—A force of 35 men is now engaged on the Granby Co.'s property at Swamp Point, about 25 miles down the canal from Stewart. These claims were purchased by the company last summer from Hartley & Moulton and

the lime therefrom is to serve as a flux for the Hidden creek ore. The rock is to be extracted by the glory-hole method and it is estimated that it can be placed in the bunkers at the smelter at a cost of 50 cents per ton. Two tunnels have already been driven, from which raises will be made to the surface. A first-class wharf has been constructed and everything should be in shape to ship in the immediate future.

L. L. & H.—Rumor says that a deal is pending whereby the owners, J. Lyden, J. Lade, and J. Hartley, may dispose of this valuable property at a good round figure. The L. L. & H. group is situated on Bitter creek, about eight miles from the confluence of that creek with Bear river. The London Venture Co., through the medium of a Mr. Hoffman, endeavored to secure this property in the fall of 1910, since which time two tunnels have been driven and the vein crosscut in both cases. The ore contains good value in both gold and silver and the opinion of those who know is that as soon as the right people get hold of the property it will quickly be added to the list of shippers.

Editorially, "The Miner" said on 22nd inst.:

"With the advent of winter development on the majority of properties is necessarily suspended and for the next few months it is hardly likely that more than three or four mines in this division will continue development. For several reasons, principally financial, there have not been as many properties worked as the season of 1912, but those on which money has been expended have more than justified themselves. The number of assessments performed was quite satisfactory and proved beyond measure that owners have every faith in the future of the camp, and next year, when the Granby Consolidated Mining and Smelting Co.'s big reduction works are in operation there is every reason to believe that several properties, now dormant, will have work resumed so as to permit shipments being made. The fact that the Granby Consolidated Co. purposes going into the custom ore smelting business, and will eventually put in a lead stack, should lend much encouragement to local owners desirous of shipping, but whose ore will not stand the larger cost of shipment to southern smelters. The important work being done by the Portland Canal Tunnels, Ltd., in driving the long adit to crosscut the Glacier Creek vein series at depth; the development being carried on by the Indian Mines, Ltd., up the Salmon river; the opening of the Swamp Point lime deposits by the Granby Consolidated Co., and the efforts made by

many individual prospectors and companies to demonstrate their respective properties speak hopefully for the future of mining in this part of the province. The Miner voices the opinion of those most competent to judge that with the advent of capital the Portland Canal Mining division will yet rank as one of the largest producers of ore in Northern British Columbia."

Skeena District.

The following notes have been clipped from "The Omineca Herald":

Amos Godfrey and J. Meen, of Vancouver, arrived in town recently on their way to the Groundhog coal fields in the interests of the B. C. Anthracite Co. Mr. Godfrey stated that the object of the trip was to put the property in shape for the winter.

An important feature in connection with mining on Rocher Deboile mountain is that the various properties desiring it can have telephone connection with New Hazelton and the Dominion telegraph service. Telephone service will be given the Crossing and the Continental Development Co. will extend the line to Rocher de Boule mine.

The best reports from the mines of the district this week are to the effect that the properties are being worked steadily and that ore is being taken out at the Silver Standard and Harris mines, while at the Great Ohio Geo. Jennings is making good headway with his tunnel driving work. At the Rocher Deboile a big gang is now at work preparing for the installation of the power plant.

Harris Bros. have started stoping at their mine. Last week the raise was broken through to the 100-ft. level. They are now taking out some fine ore and will have at least four carloads for shipment this winter.

Work on the Silver Standard road is being pushed ahead rapidly. It is now a race with the weather. If the snow shall keep off for a short time longer the road will be completed and everything will be in fine shape for making shipments this winter.

During the winter months a snow road will be cut from Telkwa to the Copper river coal fields by the Copper River Coal Fields Syndicate, and it will be in charge of F. B. Chettleburgh, who has been associated with the company for several years. This work is preparatory to a big season's development work to be undertaken in the spring when two diamond drills will be taken in and the property extensively explored.

"We have got some ore in the bottom of the tunnel and we are likely to

break into the big shoot with any round of holes now," said Geo. Jennings to the *Herald*, "when he came in from the Great Ohio where he is running a 300-ft. drift tunnel. "The last two rounds, before I came down, showed carbonate ore in the bottom. The country rock is all mineralized, and things are looking exceptionally favorable. We are just starting on the main work, having completed the crosscut, and I expect we will soon open a good ore body." Mr. Jennings will take a big lot of supplies back with him.

Richard Kleesattle, president and manager of the Black Diamond Consolidated Mining Co., of Dixie, Idaho, and whose head offices are in Seattle, passed up the line lately in company with Frank Martin and Robt. Simpson, to see some of the promising properties on the Hudson Bay mountain. It has since been learned that he made a thorough examination of the Coronada group and of the Simpson boys' property. It is understood that a deal is on for one or both of the groups. He also examined the formation in the vicinity of the White Heather group.

Speaking of New Hazelton, Mr. J. H. Stewart expressed greater faith in its future than ever. The district is dependent very largely upon its mineral wealth for development, but there are undoubtedly a number of good mining properties here. He was well satisfied with the reports received on this trip, from the Silver Standard mine, and he is convinced that it is one of the big mines in the making. "Why," he said, "there has not been spent on development in this district \$500,000, and yet there are now three properties which can make regular shipments, and each one has sufficient ore in sight to put the mine on easy street. In the Coeur d'Alenes there was hardly a mine that shipped a pound of ore before practically \$500,000 had been spent on development. There is no longer any doubt in my mind concerning the success of mining in the New Hazelton district."

FIRST ANNUAL GENERAL MEETING OF VANCOUVER CHAMBER OF MINES.

The Vancouver Province of the 3rd inst. has the following interesting account of the first annual general meeting of the Vancouver Chamber of Mines:

The Vancouver Chamber of Mines, on Friday night held its first annual general meeting since it was constituted twelve months ago, and elected its officers for the next year.

The chairman, vice-president Robert R. Hedley, in presenting his report on the year's work, stated that at the close of the financial year ended Sept. 30, the chamber had a membership of 264, drawn from a very wide area, and ranging from New York and Montreal to Vancouver Island and from the Yukon to California. There had been an increase of 266 members since the name of the organization had been changed to the Chamber of Mines. It was the aim of the chamber to have a membership of at least 500.

The most important features of the year have been the moving into suitable quarters on Granville Street; the re-arranging and housing of the mineral exhibit in suitable glazed cases; the visit of the International Geological Congress and the excellent series of lectures arranged last winter. It was mentioned that since the mineral museum was opened to the public in June last, it had been visited by over 1200 individuals all more or less connected with mining.

The chairman also mentioned as indicative of the activities of the bureau of information in connection with the chamber, that during the past eight months, 4000 letters had been sent out by the chamber, a very large proportion of which dwelt with matters appertaining to the development of mining in the province. He also briefly touched upon the work the chamber had done in specific cases.

After the conclusion of the formal business, a general discussion took place, when several very interesting points came out. It was stated that the production of silver and lead for the year will be very much in excess of last year, gold will show an increase but copper and coal will show decreases. It was also stated that the dividends already paid, and the profits earned this year, so far, are in considerable excess over those of last year.

The following is a list of the executive for the ensuing year: President, L. W. Shatford, M. L. A.; vice-presidents, Robert R. Hedley and A. B. Clabon; treasurer, Leander Shaw; executive committee, Messrs. S. E. Cartwright, Lieut.-Col. R. G. E. Leckie, Dr. E. W. Bridgman, A. A. McPhail, N. Thompson, Chas. F. Law, R. S. Lennie, A. M. Whiteside, J. B. Mathers, P. Rochussen, C. S. Verrill, James Ashworth, W. Noble Pirrie, R. Ross Napier and F. J. Crossland. Secretary F. S. Pilling was re-appointed. The following lectures have been arranged for the earlier part of the ensuing session: Nov. 3, James Ashworth, on "Notes on the Coalfields of the Coast Inspection District of British Columbia;" Nov. 17, Prof. Hill-Tout on the "Records of Geology;" Dec. 15, Dr. T. Proctor Hall on "The Vortex Theory of Electricity and Magnetism," and Dec. 29, E. A. Haggan on the "Mineral Resources of British Columbia." A number of other lectures will be given later. The financial year closed with a deficit of \$1185 which it is hoped may be wiped out during the coming year.

Frank Martin was in town Thursday after a trip to the Hudson Bay mountain. He has recently received the smelter returns on the first shipment of ore he made from the White Heather group. The shipment went 2769 ounces in silver and 39 per cent. in copper, says the *Omineca Herald*, published at Hazelton. There were about three tons of the ore, which was brought from the property at Chicken Lake by pack train and shipped over the G. T. P. to Trail about two months ago. This is the richest ore that has yet been shipped from the interior.

RED CLIFF MINE TO BE REOPENED IN THE SPRING

The news that the Red Cliff mine is to be reopened in the spring is received with intense satisfaction on every hand in the Portland Canal mining division. This mine, which was one of the mainstays of the camp from its inception, has been shut down for 12 months, and the loss of its pay roll has been keenly felt. The impetus given to copper mining generally in this part of the world by the activity of the Granby Consolidated Mining and Smelting Co. has been the direct cause of new capital being interested, and it is learned on the best authority that sufficient money has been raised to commence to block out the immense bodies of copper ore already proven to be existent in the mine. The Red Cliff will eventually be handed down to posterity as a monument of the never failing faith, supported by the untiring energy, of its promoter, A. Erskine Smith.

A new phase in the mining promises to be inaugurated early in the spring. This is the sacking and packing out of high-grade ore from the various rich properties in the district. Ben Lawrence and C. Kripple are this week taking down a scow, on which they propose to tow up a shipment of several tons of rich silver ore which they mined on a lease from the Montana group on Marmot river, owned by George Bruggy and H. C. Magee, and which they will shortly ship to the smelter at Tacoma. This will be the third of a series of trial shipments made from district properties within the last two months. The first came from the Rush & Bagg property on Glacier Creek. The returns received, as published in "The Miner," were more than satisfactory. The second was a consignment from the Lakeview group, also on Glacier creek, owned by J. McKay and C. Bibeau. In each of the three cases the ore assayed not less than \$100 per ton, while some of it ran much higher. On all these properties there is a good tonnage in sight and, encouraged by this year's results, the owners and leasers propose to do things on a larger scale next season.

In addition to these, next summer will see Erickson & Forest shipping ore from their claims on Bear river, which adjoin those formerly worked by the defunct concern incorporated as the Bear River Canyon Mining Co.

On the whole, perhaps the recent depression in the money market may be a blessing in disguise. It has been the indirect cause of the prospector going to work in self-protection. The results will speak for themselves, and smelter returns will probably succeed where the hot air artist fails.—"Portland Canal Miner."

With an output in October of 3,581 tons the Queen Victoria mine of the British Columbia Copper Company at Beasley beat all records for the year and brought the total shipments from that property for the 10 months to 22,807 tons. This output is approximately 17,000 tons higher than the shipments of any other mine in the Nelson district for that period. The ore is being shipped to the company's smelter at Greenwood.

PORTLAND CANAL TUNNELS, LTD.

At the end of November, "The Miner" said:

"The work of continuing the driving of the long adit is proceeding apace, an average of more than 50 ft. a week being accomplished. General Manager W. J. Elmendorf, who has been away for some weeks is expected to return shortly to inspect the work, which during his absence is in charge of L. C. White. The tunnel, which was commenced in October, 1912, is being driven 7x7 ft. in the clear and is in a distance of some 2,600 ft. It is designed to be of sufficient size and capacity to amply fulfil the objects of its construction—viz., after encountering the fissured zone the accommodation of all probable future traffic, and the providing of drainage, ventilation, and the most economical means of development for all adjacent properties, including the holdings of the Tunnels Co., the Portland Canal Mining Co., Stewart Mining & Development Co., Glacier Creek Mining Co., Mt. Gladstone Mining Co. (owning the Portland group), the O. K. claim and the group of claims owned by the Pacific Coast Exploration Co.

BRITANNIA MINE, HOWE SOUND.*

By R. G. McConnell.

The following account of the Britannia mine has been issued by the Geological Survey of Canada:

Situation.

The group of mineral claims owned by the Britannia Mining and Smelting Co., and known as the Britannia mine, is situated in the Coast range east of Howe Sound, about 20 miles directly north of Vancouver and 28 miles following the stream route along the coast. Howe sound is an irregular fjord, cutting well back into the Coast range, and is bordered along its whole length by rugged mountains and high ridges. The claims now being worked are situated on a steep ridge, about 4,300 ft. in height, separating Britannia creek from Furry creek. The principal workings are in the north slope of the ridge at a distance of three and a quarter miles from the coast and at an elevation of 3,275 to 3,775 ft. above the sea level.

Rocks.

The Coast range is built predominantly of granitoid rocks, mostly coarse quartz diorites or granodiorites, but contains at various points a number of inclusions of the older rocks invaded by the granitic magma. These vary in size from small angular fragments, a few feet across, to wide bands extending along the range for miles. The mineralized zone at the Britannia mine occurs in an inclusion or undestroyed area of the intruded rocks from one to two miles in width and running southeasterly from Howe sound for a distance of more than seven miles.

The rocks in the inclusion consist largely of slate, alternating with a dark intrusive, probably a diorite porphyry,

usually crushed and altered into a greenish chloritic schist. Volcanic rocks, mostly porphyrites and hardened fine and coarse fragmentals, occur near the northern border of the inclusion.

The slaty rocks, when unaltered, are dark in color and contain considerable carbonaceous matter. They are seldom regularly cleaved, except for short distances, and in places pass into fine-grained quartz biotite schists. A hard quartzitic variety due to silicification is common, and alterations into grayish and silvery white quartz sericite schists occur over large areas.

The crushed dioritic intrusive is economically the most important rock in the group. It forms the country rock at the Britannia mine and is also heavily mineralized at other points. It alternates with the slates and their altered equivalents, the sericite schists, in bands and lenticular areas ranging from a few feet to more than 1,000 feet in width. Like the slates, it exhibits varying degrees of alteration, often passing in a short distance from a hard, irregularly jointed, gneissic rock to a soft, greenish, well-foliated, micaceous schist. A light green variety, spotted conspicuously and fairly regularly with dark green chlorite films, often half an inch or more in length, forms the principal country rock along the mineralized zone at the Britannia mine. The origin of the green films has not been definitely determined. They may represent crushed ferro-magnesian phenocrysts, but possibly are derived in part at least from small fragments of slate included in the intrusive and subsequently crushed and altered.

Dikes genetically connected with the surrounding Coast range batholithic rocks, usually abundant in inclusions, are rare in the Britannia area, except near the contact.

An excellent section of the alternating slates and crushed intrusives is afforded by a tunnel driven from Britannia creek at an elevation of 2,100 ft. above sea level southwards diagonally across the strike of the rocks for a distance of 4,200 ft.

Mineralization.

Mineralization at the Britannia mine is on an extensive scale. The deposits are of the replacement type and are formed along wide, irregularly fissured zones, enclosed in and striking with the greenstone schists. The most conspicuous croppings occur in the Jane and adjoining claims to the east and consist of two high iron-stained bluffs, about 1,000 ft. apart, facing each other across the drift-covered bottom of Jane Creek valley. The mineralized zone exposed in the two bluffs consists of silicified schists impregnated with iron, copper and zinc sulphides, and has a width in the eastern or Mammoth bluff of fully 200 ft. It undoubtedly extends across the concealed interval, separating the two bluffs and may be considered to have a proved minimum length of 2,000 ft.

East of the Bluff mineral zone a number of disconnected croppings occur in the steep mountain slope covered by the Fairview claim. A tunnel driven under these from the Mammoth bluff at a depth of about 1,000 ft. below the crest of the ridge resulted in the opening of a second important mineral zone, practically a continuation of the Bluff zone, but separated

from it by a short lean stretch. The strike is also 30 deg. more to the south. Development work on the second, or Fairview zone, is still in progress, and its full dimensions have not yet been ascertained. The work done up to the present has shown it to have a minimum width of fully 500 ft. made up of bands of commercial ore, separated by barren, or nearly barren, schists. Drifts have been carried along the zone for a distance of 1,200 ft.

Minerals.

The metallic minerals in the Britannia orebodies consist of pyrite, chalcopyrite, considerable zinc blende in certain areas and rarely some galena. Small quantities of black oxide of copper and bornite occur as alteration products, but are nowhere abundant. The gangue is principally the greenstone schists forming the country rock, more or less silicified. Small quartz veins, generally following closely the direction of the schistosity, but frequently cutting directly across it, are numerous. Calcite in very small quantities is occasionally present, and some fluorspar has been found.

Ores and Orebodies.

The wide Bluff mineral zone originally worked is practically a low grade copper deposit throughout its whole extent. Pyrite, in masses, disseminated grains, and in veinlets through the silicified country gangue, is the most abundant mineral present. Chalcopyrite, in small lenses, veinlets, and scattered grains, occurs with the pyrite, but in much smaller quantities, and in places a notable percentage of blende is present. No mining is at present being done on this zone. A considerable quantity of ore was mined and concentrated before the discovery of the Fairview zone, but the venture was not commercially successful. Since then transportation to the coast has been improved, better methods of treatment largely increasing the recovery of metal have been adopted, so that the ores could probably now be mined and treated at a fair profit. The average tenor in copper is about 1.5 per cent.; in addition the ores contain 0.5 to 1 oz. in silver, and in the western portion of the zone, 40 cents in gold.

The character and distribution of the ores in the Fairview zone differ markedly from those in the Bluff zone. The chalcopyrite, the principal valuable mineral present, in place of being disseminated more or less irregularly through the whole width of the zone, is concentrated along certain lines in fairly definite orebodies, ranging in width from a few feet or more, which have proved very persistent. The orebodies are not confined between walls and are marked mainly by a more or less complete cessation of both metallic and non-metallic mineralization. They are approximately parallel, but occasionally diverge or unite at low angles. The dip is to the south, at an angle of about 70 deg. and is conformable, or nearly so to that of the enclosing schists. In the present workings six ore shoots have been encountered and followed for varying distances up to 1,000 ft. The vertical range has been proved for 500 ft.

The chalcopyrite in the orebodies occurs characteristically in fairly large, nearly pure, aggregates, usually as short

*Appendix to International Geological Congress Guide Book No. 8.

lenses, occasionally a foot or more across, in stringers interleaved with or cutting the schists at a low angle and in reticulating veinlets penetrating the silicified schists in all directions. Only a small percentage occurs in disseminated grains. The quantity present varies in the different orebodies and along the dip and strike of the same orebody. The general average tenor in copper of the whole system of leads is given at 2.5 per cent. The silver content is small, amounting only to about 0.5 oz. per ton, and gold occurs only in traces.

The proportion of pyrite present is much smaller than in the Bluff zone, and zinc blende, prominent in the latter is absent.

The production in 1912, according to published statements amounted to 193,000 tons, yielding 14,300,000 lb. of copper and 76,500 oz. silver. The present production is approximately 600 tons per day, the full capacity of the present transportation facilities from the mine to the mill.

Development.

The Fairview mineral zone has been opened by five levels at elevations of 1050, 850, 700, 600 and 500 ft. below the summit of the ridge into which they are driven. The levels, with numerous crosscuts and raises following the orebodies, serve to explore the zone for a distance of 1200 ft. along the strike and 500 ft. along the dip. A long tunnel at a depth of 1200 ft. below the present lowest level, starting from Britannia creek and running toward the ore zone, is now completed to a point beneath and a short distance west of the orebodies worked. This will be connected in the near future with the upper workings by a large 3-compartment shaft and an ore chute. The extension downward of the orebodies below the 1050 level can be reached from the shaft by short drifts.

General Treatment of Ore.

The chalcopryite in the Fairview orebodies occurs as a rule in fairly large aggregates, often separated by considerable waste, and the material mined is concentrated before shipment. The ore is crushed at the mine and transported to the concentrating mill at Britannia Beach by an aerial tramway, built in two sections, with a daily capacity of about 600 tons. At the mill it is first washed in a

4 by 8 ft. trommel with 1½ in. perforations. The oversize discharges on to a sorting belt, and about 50 tons of 12 per cent. ore and 150 tons of waste are picked out daily from the 600 tons received. The milling ore, except the undersize from the washing trommel, passes from the conveyor to a Blake crusher, and then through a series of spring rolls, which reduce it gradually to the size required, about 2 mm. for treatment in Hancock jigs. The greater part of the sulphides is separated out in these machines. The tailings and the undersize from 1½ mm. trommels are ground in Hardinge pebble mills to a 40-mesh or smaller size, and subjected to the Minerals Separation Co's flotation process, the details of which are still kept secret. The Hancock jigs used are of the Anaconda type and the separation of the sulphides by them, followed by the use of the Mineral Separation process on the finer material, has given excellent results, only a very small percentage of the sulphides escaping. The concentration is in the ratio of 4 to 1.

Equipment.

The present equipment is inadequate to the needs of the mine, and extensive improvements and enlargements are being made. A new concentrating mill with a daily capacity of 200 tons is contemplated, and work is in progress on a system of transportation of the ores from the mine to the Beach, which involves the construction of a double track gravity tramway a mile in length, with an average grade of 15 per cent.; a switchback track five miles in length with a 3 per cent. grade on which gasoline locomotives will be used; a 9 by 13-ft. tunnel, 3,600 ft. in length; and a 1,200-ft. vertical chute connecting the tunnel with the present workings.

Water power developing 1800 h.p. from Britannia creek is largely used to operate the mill, compressors and other portions of the extensive plant, and this, with 650 h.p. obtained from steam, is ample for present requirements.

During eleven months of 1913, to December 1, the Granby Consolidated Co. has smelted at its works at Grand Forks, Boundary District, 1,142,053 tons of ore, of which 1,127,174 tons was from its mines in Phoenix camp, and the remaining 14,879 tons was custom ore.

A NEW PLACER-GOLD FIELD.

The following information relative to what is known as Sibolla creek, in the southwestern part of the Skeena district, has been sent out from Telkwa for publication. Telkwa is situated at the junction of the Telkwa and Bulkley rivers, the latter being a tributary of the Skeena river, in to which it flows near Hazelton.

Sibolla creek is about 120 miles southwest of Telkwa, and to westward of the lake country in which are Francois, Ootsa, Tahtsa, and numerous other lakes. The Coast range forms, in that part of its length, the divide between the lake country on the east and the head Gardner canal on the west. The newly reported placer-gold field can be reached by Gardner canal, thence eastward up Kemano river and over the Coast range, from the west (though as yet this route has been little used); by trail south from Telkwa; or west from the route of the Grand Trunk Pacific railway line at Fraser lake and thence by Francois and Ootsa lakes.

The account of the new field, from Telkwa, follows:

Of ten days spent at the Sibolla creek placer field, three were occupied in sampling the gravel above Discovery claim, on the creek, and this resulted in finding fly-specks and colors in only one pan out of four. No coarse gold was shown. Below Discovery, for the first three claims, the result was similar, and after that, to No. 19 below, the colors became more numerous, but not more than one-quarter of the total pannings was barren. A shaft was being sunk at the time by S. White, I. McCulley, Dave Mackenzie, Billy George and Louis Koltas, in an effort to reach bedrock, and after 12 ft. of a 6 by 6 ft. shaft had been sunk, a windlass erected and the hole timbered, the water came in in too great volume, and work on all the creek claims was stopped.

Attention was then given to the bench claim of Leo McLaughlin and partner, on the north limit of No. 3 below Discovery, but at the time your correspondent left bedrock had not been reached. Colors were consistently present all the way down the shaft, which was at that time 15 ft. deep, timbered, and with windlass erected.

Prior to leaving the field, most of the prospectors going out turned over all their spare supplies to those two men, who then had provision for two months.

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The only other party on the ground properly equipped is that of George Barrett and Joseph Bussinger, who had a good outfit, including a rocker, and provisions for four months. They are staked on the bench and should reach bedrock in the big flat without being seriously impeded by water.

The bench north of Sibolla creek had all been staked, but as far as could be seen, no effective development had been done, except an 8 ft. hole sunk by your correspondent on the Newsboy claim in which flyspecks and colors were present after the first three feet. The wash there is deep and at the bottom of the hole the conglomerate gravel, slightly cemented, is moist and full of air spaces; pay dirt is not likely to be found until a strata more dense and less coarse shall have been reached.

On the bench due west of the camp, some promising ground was seen; this is marked with dry water courses and is sedimentary in character. The gravel is fine and heavily cemented, but no pay was found, though colors were fairly plentiful with a large proportion of white iron and some black sand. A dozen claims had been staked on that ground.

Contrary to the first report, no contact of slate and porphyry was seen, but shale or coarse slate runs parallel with the porphyry along the range and dips into it at an acute angle. The large round boulders so numerous in the wash are chiefly gray or blue granite, while rose quartz is plentiful in the gravel with an occasional small specimen of gold in some of the larger pieces. The field shows no sign of having been an ocean beach, but rather resembles the bed of a lake or, what is more probable, glacial detritus, and the characteristic surface boulders are spread along a distance of more than 12 miles, intersected by swamps mainly with a gravelly bottom. Three beaver dams that have to be crossed before reaching Sibolla creek show evidences of considerable wear, and should rain fall this month (October) horses with packs will not be able to get through the field; the water above the dams is low and the frost has been severe during the past week.

Andy Goodwill, one of the original locators, and partner, were met by us as we came out; they had four pack horses and expect to spend the winter on No. 1 below Discovery, where the first coarse gold was taken out. C. P. Price, also one of the original locators, who is outfitting at Telkwa for a similar purpose, states that when coming out by a new route from the Sibolla country he discovered on the same range, about 12 miles to the northward, a similar creek to the Sibolla, in which colors were plentiful, this bearing out our observations.

More than 300 claims have been staked, but with the exceptions above noted, no party of prospectors has been outfitted properly to reach bedrock in what is, to all surface appearances, a most promising field. If the men now on the ground fail for the present, in all probability the value of the field will not be determined until next year.

The time actually occupied in going in from Telkwa was six and one-half days, and in coming out, travelling light, five days.

Kemano River.

The following additional will be of interest:

In 1906 Mr. Herbert Carmichael, then provincial assayer and assistant to the provincial mineralogist, visited Kemano river; a short account of that visit was printed in the "Annual Report of the Minister of Mines, 1906," pp. H. 67-8. From that account the following notes have been taken:

"Kemano river flows into Gardner canal on the northeast side, 30 miles from the mouth of the canal. It is a stream of considerable size and is navigable for canoes a distance of 20 miles, but is so swift-flowing as to require 'poling' or 'lining' all the way. At the mouth of the river there is a good harbor, with anchorage in not too deep water. The mountains, which rise abruptly to a height of 4,000 or 5,000 ft., seem to be entirely granitic and show very marked glaciation to a height of 2,000 ft. or more. At 8 miles from the mouth of the river, Pintledanne creek flows in from the north. From this creek there is a good trail, with an easy grade, to Tahtsa lake, which in turn flows into Ootsa lake. The height of the pass is said to be 4,000 ft. and the distance from Gardner canal to Tahtsa lake, 20 miles. This pass seems to afford an easy route to the Ootsa lake country."

Mr. Carmichael also gave brief particulars of a copper-bearing vein on Pintledanne creek he examined.

RAILWAY IN PORTLAND CANAL DISTRICT.

The "Portland Canal Miner" said on November 8:

After spending a busy week here and in examining the work of the Portland Canal Tunnels, Ltd., in which he is largely interested, President Robert M. Stewart of the Stewart Land Company, Ltd., returned to Victoria. While here he took a number of photographs of the wharf, townsite, etc. Seen by the "Miner," Mr. Stewart was most optimistic as to the future of the townsite and camp. He predicted that next summer would see a forward movement in all lines, as he stated that from latest information received at the head office there was now every reason to believe that 1914 would see the extension of the Canadian North-Eastern Railway into the interior. "Had it not been for the Balkan war and the consequent tying up of vast sums of capital in the old country I feel assured that Sir Donald Mann would have carried out his intentions this summer in continuing the surveys for the railway. Happily, financial conditions are improving now and I am convinced that surveying and construction also will be resumed next year," he said.

The "Miner" afterward added:

Since Mr. Stewart's departure for the south a telegram was received in Stewart stating that Sir Donald Mann had financed the Canadian North Eastern Railway scheme through a group of New York capitalists, and that surveys would be proceeded with in the spring.

ROCHER DEBOULE COPPER CO.

On November 7 "The Omineca Herald" printed the following particulars of intended developments in connection with the Rocher Deboule mine, which is situated in a part of the Omineca mining division tributary to New Hazelton:

The Continental Development Co., of Butte, Mont., which holds the two-year lease on the upper workings of Rocher Deboule mine recently granted to J. E. Oppenheimer and associates, has started to equip that property with a full complement of machinery. A force of 20 men will be employed at the start and the force will be maintained at that number until the property shall be on a producing basis.

D. J. Williams, formerly assistant superintendent of the Pittsmtont mine and smelter at Butte, will be manager, with F. W. Cochran as electrical engineer and Frank A. Brown, mine superintendent.

The first work to be undertaken will be the development of a waterpower on Juniper creek about five miles down the hill from the camp. Here a dam and headgate will be constructed and a pipe line 3500 ft. long will be laid. The pipe line will deliver the water to an improved Pelton wheel under a 200 ft. head and will generate about 200 electrical horse power.

The power will be transmitted to the mine where a 10 drill compressor will be installed near the site of the new main working tunnel. This tunnel will be started the moment power is available and driven with three shifts of miners to tap the upper, or No. 1 ledge at an added depth of 500 ft. Until this work shall be accomplished it is not the present intention to do any other mining or development work.

Speaking of his plans for operating the property Mr. Williams said: "We have at present upward of 10,000 tons of shipping ore in sight in the upper workings. When we have determined the total tonnage available for production above the new tunnel level we shall decide on the best method of getting the ore to market. At present I favor an aerial tram from the main tunnel to the top of the mountain and a second aerial line from there to the railway at Carnaby.

"For this reason and because the present workings are so hard to reach from camp I do not expect to produce any ore until we have worked out our plans to handle a large daily output, of say from 100 to 300 tons. It is possible however, that I may instal a small temporary aerial tram from the camp to the upper workings for the purpose of handling the men, and to ship enough ore to determine absolutely the grade and value of the mine run of ore.

"So far as our plans have been worked out they contemplate the equipment of the Rocher Deboule mine with everything necessary to its economical operation and its development forthwith to a depth that will permit of production on a large scale. Both Mr. Oppenheimer and myself have confidence that the mine will prove to be big and rich and that its output in six months from now will be so large as to

amply justify the outlay we contemplate making."

Not a Fair Deal.

In its issue of November 21, the "Herald" said.

"Last week copies of the lease given by the directors of the Rocher Deboule Copper Co. to J. E. Oppenheimer, were received in town. It required only a glance to see that the deal was anything but a fair one to the owning company's shareholders. The local shareholders held a meeting Saturday afternoon and decided to take steps at once to stop the work now being carried on by Mr. Oppenheimer's leasing company, (The Continental Development Co.), and to have the affairs of the Rocher Deboule Copper Co. inquired into by the courts."

EXPERTS IN PORTLAND CANAL DIVISION.

The "Portland Canal Miner" says:

Since the recent visit of two representatives of the Canadian Mining & Exploration Co., Ltd., with offices in Toronto and New York, who spent several weeks in the district examining a number of claims, particularly in the Salmon river camp, interest has been awakened in the possibility of the company eventually entering this field. In conversation with the representatives, "The Miner" learned that both were agreeably surprised at the diversity of mineral showings and the good grades of ores to be obtained within the bounds of the Portland Canal mining division. A number of properties were examined and sampled and a lot of valuable data obtained relating to the camp generally. While it is too early to state what the result will be, it is believed by those who have a more intimate knowledge of their mission that at least one substantial deal is now pending on their report.

The Canadian Mining & Exploration Co. was organized eighteen months ago to acquire and operate mining properties mainly in Canada. During that time it has had its experts out over the States, Canada and Alaska. Its engineers have investigated 700 properties of which 400 have been rejected. Among the properties examined were the Surf Inlet Mines on Princess Royal Island, and some Nelson, Hazelton, Texada Island and Portland Canal offerings.

The Surf Inlet property is under consideration, and an offer will probably be made for it. The company is financed by leading bankers and financial men of Eastern Canada and the Eastern States, and they put up a capital of \$2,500,000 cash, besides guaranteeing a further \$2,500,000, so that the company is in a position to handle any mining proposition, however large, which may meet with its approval. The fact that it has examined properties in the prospecting stages indicates that it is not bound within the close investment lines of English companies, which will only handle developed and proved mines.

ANNUAL MEETING OF WEST KOOTENAY POWER AND LIGHT CO.

A despatch from Montreal to the Toronto "Globe," dated October 29, was as under:

"At the adjourned annual meeting of the West Kootenay Power and Light Co. held here this afternoon, the company reported gross receipts of \$415,413, an increase of \$82,549. Operating expenses were \$115,279, an increase of only \$5,022, leaving a net of \$300,134, or an increase of \$77,527. While gross receipts registered a gain of approximately 25 per cent., operating expenditure, including maintenance, was less than 5 per cent. higher, leaving a gain of just a little less than 35 per cent. in net earnings.

"After the payment of interest on the West Kootenay Power and Light Co.'s bonds and sinking fund in connection therewith, interest on the Cascade Co.'s bonds and sinking funds therewith, and the usual dividends on the preferred and common stock, a balance of \$74,919 was carried forward to the credit of profit and loss, or \$54,393 more than in the previous year. This favorable result was obtained despite the fact that the company was paying dividends on an additional \$100,000 preferred stock, and that a full dividend of four per cent. was paid on the common, against 2 1-2 in the year previous. With the balance carried forward out of the year's earnings, the total at credit of profit and loss at the end of the year was \$248,473.

"The board of directors was re-elected with the addition of Mr. J. Shaughnessy, who fills the vacancy left by the death of the late president, Mr. W. M. Doull. Mr. C. R. Hosmer, who was recently elected president, in succession to Mr. Doull, was re-elected to that office."

For the benefit of those who are not informed concerning the connection of this company with the mining industry of British Columbia, it may be added that the company owns and operates comparatively large hydro-electric power works at Bonnington Falls, Kootenay river, about a dozen miles west of Nelson, and smaller works at Cascade City, Boundary district; also that it supplies electric power to the larger mines and the smelting works of West Kootenay and the Boundary.

DR. YOUNG AGAIN VISITS ATLIN.

The Vancouver "Daily Province" on October 31 published an account of an interview with Hon. H. E. Young, Provincial Secretary, who represents Atlin constituency in the Provincial Legislature, and who recently returned to Victoria from a trip to Atlin. The account seems to have been written by some one unfamiliar with Atlin district, both as to its geography and its gold production in past years. Omitting a number of evident inaccuracies, the following probably fairly represents Dr. Young's intended story:

Hon. Dr. Young declares that the 1913 mining season in Atlin camp has been the best in recent years. In talking of his trip he said: "I went north on October 4 with the intention of looking into the needs of the part of the con-

stituency in the region about Atlin lake. The success of the miners in Atlin camp this year has simply astounded me, although I knew from previous trips, and from reports made by friends, that the season had been a good one. The placer mines have been yielding much gold. Mr. J. M. Ruffner, representing United States capital, who has for some years been working a hydraulic proposition on Pine creek, told me he was in some of the richest ground he had yet worked there." Dr. Young himself washed several pans of gravel, and from one he obtained gold to the value of \$50.

Both Quartz and Placer Mines.

At the Engineer group, on Taku Arm, on which property free-milling quartz occurs, the owners with a two-stamp mill are obtaining up to 100 oz. of gold a day. Some of the hydraulic mines are also doing well. Jas. McCloskey is drifting on a property on Spruce creek, on which a 44-oz. nugget was obtained. On a group of claims on Birch creek, H. Peplow Pearse, manager for British owners, took out a 77-oz. nugget with very little quartz in it.

The minister states, further, that several representatives of British capitalists have been looking over Atlin district and he expects that after they have examined the quartz properties, to which they are paying particular attention, much money will be available for development work in that part of the field.

"I believe that the great developments in mining will take place in Atlin camp next year," he stated. "Results have shown that the statements of the Dominion Geological Survey that there is a valuable mineral belt running southeast from the Yukon, through the Tagish lake district, are quite correct. A good deal more gold is still to come out of that section, I believe. I may say in this connection that I have been informed that Mackenzie & Mann are spending much money in developing claims near Windy arm of Tagish lake, north of the British Columbia line, in the Yukon."

May Have New Wagon Road.

Hon. Dr. Young announced that it was his intention to recommend the construction next year of a wagon road into the Atlin district from the south. He proposes to link this road up with one built this year from O'Donnell river to Atlin city. This road is 30 miles in length and the new one planned would probably be at least 50 miles long, running from a point some distance up Taku river north to O'Donnell river. He states that a stern-wheel steamer could be operated on Taku river, furnishing connection with the overland highway from the coast steamers. By means of such a steamer service and a traffic roadway running through easy country the long circuitous journey to Atlin via Skagway and the waterways beyond would be avoided. The difficulties attendant upon customs bonding through American territory would also be avoided. At the present time, in order to get to Atlin it is necessary, after reaching Skagway, to go on a long roundabout trip north and east of Skagway and then going south

to Atlin. The construction of a new traffic road and the operation of a stern-wheel steamer on Taku river would provide a shorter route, as well as make conditions easier for travellers, believes the minister.

"Who knows, that may be a railway route some day soon," said Dr. Young today in this connection.

As indicating the possibilities of the Atlin district, which he describes as one possessing scenic attractions, Dr. Young states that the White Pass & Yukon route at the present time is erecting in Atlin city a large tourist hotel, which will be open to travellers next year.

THE OREGON, NEAR HEDLEY.

The Hedley Gazette recently published an account of the Oregon mining property situated in Camp Hedley, Similkameen. The following is an abstract:

The Oregon property has been under development since last March and the indications appeared favorable for reaching the orebody. Jim McNulty and partner are driving a crosscut at almost right angles from the face of the Bahrs tunnel to catch the footwall of an orebody which, from surface indications and the geology of the hill should soon be encountered, unless it has been playing some of those pranks for which elusive orebodies are sometimes noted.

The Oregon lies on the east side of Similkameen river between three and four miles below Hedley, and is on the watershed between Eighteen-Mile and Sixteen-Mile creeks, which flow into the Similkameen.

About six years ago Henry Bahrs, who had a bond on the property, drove a tunnel to tap an orebody which was exposed on the surface, but he appeared to have miscalculated the shape in which it was lying, for the tunnel apparently ran below it and across the line of the strike. The work now being done is a crosscut from the face of the Bahrs tunnel and almost at right angles to it. If the strike of the orebody should be as the owners believe it to be, the ore will be struck in the top of the crosscut.

Excellent value was obtained from sampling of various outcrops, and since Bahrs threw up his bond a great deal of stripping and trenching has been done to ascertain the geology of the immediate vicinity and the relative positions of the various rock formations and their trend. This done, the present work seems well calculated to give results.

The tunnel mouth is on so steep and rocky a hillside that there is no accommodation for the camp which is placed over on the Sixteen-Mile creek slope.

The working face is now so far into the mountain that it is surprising there is not more trouble with foul air from the blasting. As it is, the smoke and gas clear out in about ten minutes after shooting off a round of holes.

Altogether the outlook seems very encouraging and it is to be hoped the owners may soon have ample return for their outlay of labor and cash.

DREDGING FOR GOLD ON LARDEAU RIVER.

The Kaslo Kootenai gives the following particulars of an enterprise that has been carried on in the lower Lardeau country:

That platinum as well as gold exists in the bottom of the Lardeau river valley is the belief of C. H. Buschner, of Philadelphia, Pa., owner of the gold dredge which has been working all summer at Goldhill, a point on the river a few miles south of Poplar.

In proof of his assertion Mr. Buschner, who was in Kaslo recently, was exhibiting a small glass phial containing a brown-colored dust, with bright specks liberally sprinkled through it. The dust is said to contain platinum. Mr. Buschner has had no assays made as yet, but claims that he has satisfied himself by a chemical test that the material in the bottle contains platinum.

Mr. Buschner also exhibited a number of similar bottles containing gold dust and small gold nuggets, samples of the precious metal that his dredge is now saving from the boulder-strewn bed of the river. Some of the dust was as fine as flour, and some of the nuggets as large as a fair-sized grain of wheat. He also had a piece of native silver, as large as a pigeon's egg, which had been caught on the plates of the dredge.

"We are now taking sand and dirt from 10 ft. below the surface," he said, "and as we have gone deeper the value has been perceptibly increasing, now we are working into the black sand, which is rich. But this brings with it a new problem—the need of a somewhat different and additional method of treatment from that which we have been following. Special machinery will have to be installed on the dredge in order to accomplish this. I am now on my way east to purchase the additional machinery which will be used in the treatment of the black sands and our by-products. I expect to return in October and as soon as the plant is in shape we will keep it running day and night until the middle of December, when it will be closed down for the winter. We hope to make an early start next spring and will thereafter, if possible, operate steadily right through the succeeding winters as well as other seasons."

Up to the present, Mr. Buschner stated, the dredge had done a little better than pay operating expenses and other incidental expenditures, though it had been working under a handicap on account of short shifts, many necessary alterations, surface dirt for feed and other drawbacks that can only be expected at the outset of a new enterprise of this nature. One handicap that is forcing a temporary close-down, is the cost of fuel, wood having been used heretofore, since the dredge was put into operation last spring. It is proving an expensive item, however, on account of the cost of labor, so as soon as the quantity now on hand is used dredging will be stopped until the proposed improvements are added, after which coal

will be used for fuel, for it is quite clear that the latter fuel will be more economical.

Mr. Buschner holds a dredging lease of three and one half miles along the Lardeau river, and this ground contains gold wherever tests have been made. Most of it is very fine, too fine for handling by ordinary placer mining methods. That there is much ground that can be profitably worked he has no doubt, and if the existence of platinum in commercial quantities be demonstrated, the whole river valley should see the commencement of an era of activity within a very short time that will probably eclipse the Poplar Creek rush of ten years ago.

REPORT ON ISLAND COAL MINERS' STRIKE.

The Victoria "Week" says:

It has been a long while in coming. Now that it is before the public, the report of Mr. Samuel Price, K. C., on the Nanaimo strike discounts the very unflattering comment made upon that gentleman by the Liberal press. A more lucid, concise and sensible report has rarely been presented. Mr. Price wastes no words, he does not cloud the issue with vague and ponderous phraseology, but he makes his findings in simple language, which all can understand, and follows with four specific and important recommendations. Incidentally he brushes aside the very industriously circulated suggestion that the Minister of Labor refused to grant an Arbitration Board under the Industrial Disputes Act, and shows that Hon. Mr. Crothers did everything possible to have such a board formed. He also shows that it was the officials of the Union who refused to fall in with such an arrangement.

Interest is centred, however, mainly in the recommendations, the first of which is that the term "strike" should be defined by the Legislature. Considering that the miners left work in May last on what they termed a "holiday" and that they denied the existence of a strike, it would certainly seem that this recommendation is in order. The next suggestion is that collective agreements entered into voluntarily and formally for a specified time between workmen and employers should be given the sanction and protection of the law. This is a sound recommendation and would undoubtedly do much to prevent strikes. It was just because such agreements have been disregarded, and their provisions treated as a matter of convenience rather than of obligation, that industrial disputes have often been precipitated. Such legislative action would not only insure greater deliberation in the framing of agreements, but would necessarily involve very careful consideration before breaking them. The third recommendation is that there should be a change made in the law to prevent discrimination against employees who exercise the legal right of joining or being connected with unions. This is a recommendation entirely in the inter-

ests of the men and one which is fully justified by experience. Mr. Price's fourth suggestion is to render it unlawful for any person to intimidate or insult a workman because he refuses to line up with his fellows in the matter of a strike or a labor dispute. Such protection is so reasonable as not to be open to argument.

Closing the report, Mr. Price points out that the essence of the trouble is the resolute determination of the men in the union to establish a branch of the United Mine Workers of America, and to compel recognition of it by the employers, and the equal determination of the companies to have nothing to do with this organization. There was no matter in dispute concerning wages or conditions of employment, and the issue is therefore a simple one. Whatever the individual opinion of the readers of *The Week* may be, there can be no question of the value of Mr. Price's report and the desirability of acting on his recommendations.

BEN HUR MINE, REPUBLIC.

Dr. C. M. Kingston, of Grand Forks, Boundary district, is general manager, and Mr. John Benson is superintendent for the Ben Hur Leasing Co. of the Ben Hur Mine, in Republic Camp, Washington, and the leasing company's connection with it. The Republic correspondent of the "Spokesman-Review," Spokane, wrote on Oct. 20:

"During the month of August the Ben Hur Leasing Co. shipped to the Trail, B. C. smelter ore valued at about \$24,000. In September this company sunk the Ben Hur shaft from the 500 to the 600 ft. level, shipped a considerable quantity of ore and mined and stored beside about 1500 tons, ready for shipment.

"On October 12, 1910, the leasing company leased the Ben Hur mine from the Ben Hur Mining and Milling Co. for a term of five years. The lessees have sunk the shaft to the 600 ft. level and will have it completed and timbered to the 700 ft. level by about November 1. When that is done the 600 will be made the main working level of the mine for the present and until it can be ascertained with what strength the ore shoots pitch below it. To that end a crosscut is being driven 120 ft eastward toward the vein, which will be immediately explored both to the north and south.

"From a big station on the 400 ft. level a crosscut has reached the vein and a drift has been driven 135 ft. north and another one 40 ft. south. From the south end a raise and stope have been carried up to the 300 ft. level. On the 300 the vein has been exploited by driving about 500 ft. north and 90 ft. south, and from a point 300 ft. north of the shaft a raise has been put through to the 200 ft. level in good shipping ore and 1500 tons have been broken to average \$15 value per ton.

"The leasing company has shipped about \$200,000 worth of ore, netting about \$100,000, which sum has been expended on development and the purchase and instalment of new machinery."

The quantity of ore from the Ben Hur received at Trail during seven weeks ended October 16, was 2,814 tons.

REDUCTION OF ZINC ORES IN ELECTRIC FURNACE.

The Mining Journal, London, recently included the following notes on "Reduction of Zinc Ores in the Electric Furnace" in its "Foreign Notes": "The Journal du Four Electrique imparts some useful information relative to the patented process of Messrs. Cote and Pierron for the reduction of lead ores by their electric furnace, which has been installed at the Paul Girod works in Savoy. Experiments have for some time been made on lead ores derived from various mines. The treatment of blends containing 30 per cent. of zinc strongly ferruginous and plumbiferous, and also of blends with a high percentage of fluorine, yielded, on first tapping the furnace, zinc metal of 99.60 per cent. and 99.85 per cent. purity. The furnaces are worked continuously, and there is only one reduction operation. Crude ores are charged and smelted to separate the metal which flows in a refined state from the condenser direct into the ingot moulds. The appearance of zinc powder, which in the early trials was so difficult to prevent, is now no longer apparent, and there is an absence of all fume, while the manipulation of the furnaces has become quite easy. The loss of metal, even in ores of low quality, is less than 7 per cent. Labor has been reduced to three workmen per furnace of 400 kilowatts, smelting on the average 5 tons in 24 hours. In employing hydro-electric power at 52 shillings (about \$13) per horse-power per annum, which can readily be obtained in the mountain region where numerous deposits of zinc occur, badly situated for transport to existing smelters, the results will be more favorable than those obtained from works burning charcoal at 9s. 6d. (about \$2.30) per ton. The electro-metallurgy of zinc is susceptible of considerable development. It is announced that the Sulphide Corporation has established works at Cockle Creek, New South Wales, Australia, for the electric smelting of zinc ores with the manufacture of sulphuric acid and of superphosphate. The furnace is of Swedish pattern and of 500 h.p."

FREIGHT RATES TO EASTERN SMELTERY.

Among other matters brought before the Canada Railway Commissioners at their session held in Vancouver on October 27 was one relating to railway freight charges on ores shipped from British Columbia to Kingston, Ontario, and to other rates. The following is from one of the daily newspapers:

The longest argument took place over the application of the North American Smelting Co., of Kingston, Ontario, for a reduction of the freight rates on lead ores and silver-bearing lead ores from points in British Columbia to Kingston, and on pig lead from Kingston to Montreal, Toronto and other eastern points. Joseph Martin, K.C., appeared on behalf of the North American Smelting Co., and A. H. Macneill represented the Consolidated Mining and Smelting Co., Trail.

The latter contended that the reduction in rates was urged in order that the eastern company could compete with the Trail smelter. He argued that this was

not of concern from a railway point of view, being merely a question of trade rivalry. He analyzed the cost of routing consignments from near Field, whence ore had been shipped to the works at Kingston, of the North American Smelting Co., and said that the Canadian Pacific Railway rate schedules were designed to encourage the shipment of high-grade ores east.

Mr. Martin asserted that the C.P.R. rates were drafted so as to favor the Trail smelter, which he declared was practically owned by the railway company. He submitted that discrimination was being shown by the C.P.R., as it had reduced its rate from \$14 to \$12 per ton on ore bearing 20 oz. of silver or less per ton. He urged that the restriction as to the value of the ore be deleted.

Mr. Macneill denied that the C.P.R. was the owner of the Trail smelter, observing that the stock was held by numerous stockholders.

Mr. Drayton, chairman of the Commissioners, intimated that he would take up with his colleagues the arguments which had been submitted, and give a ruling later.

IRON DEPOSITS TO BE DEVELOPED

"The Omineca Herald" lately published two despatches, dated from Hubert, a new town along the line of the Grand Trunk Pacific railway. One of these was as follows:

While the public are beginning to realize that the New Hazelton district has great mineral wealth, it is not generally known that iron deposits are among the resources. The deposits uncovered are on the Copper river about 40 miles south of here. The government trail and one of the G.T.P. surveys pass through the property.

The extent of the ore is unknown, but it is estimated there is 10,000,000 tons on the surface and cuttings show it to be at least 45 ft. deep. It may run much deeper but this will not be known until the spring when diamond drills will be put on.

The claims were staked by Mancell Clark who has done a lot of work on them. They are now controlled by the North Pacific Mines Co., of Prince Rupert. This company brought out John V. Rittenhouse, of New York, to examine the mines. An interview given by him to the Vancouver "Sun" appeared in these columns last week.

Iron Deposits.

After having Mr. Rittenhouse's report the North Pacific Mines Co. succeeded in interesting T. D. Macfarland and his Seattle associates who are forming a \$15,000,000 company to erect a blast furnace. They originally intended putting the smelter near Vancouver but should they be satisfied with their examination of this iron deposit on the Copper river it is likely the smelter site will be changed to the north.

The information contained in the other despatch, dated November 12, was as under:

The survey for the branch line railway which is to open up the iron deposits and the whole district south of

here, as mentioned in the following article which appeared in the Vancouver "Sun" recently, has been completed. Hubert is the only place from which this railway can reasonably be built, and that whole district, as well as the greater portion of the Bulkley valley, is directly tributary to Hubert. The Sun's article is as follows:

"It is my opinion that the iron deposits I examined in the Telkwa district are of great potential value, and in the near future will be one of the factors in the development of the steel industry in this section," said John V. Rittenhouse, consulting mining and civil engineer, of New York, who has returned from an examination of some mining properties in northern British Columbia. He was called from New York to examine the iron deposits which are controlled by the North Pacific Mines, Co., a Prince Rupert corporation.

The deposits are situated on the original survey line of the Grand Trunk Pacific railway between Telkwa and Copper City. In extent the deposit, as ascertained from the engineer's examination, covers more than 200 acres, and the company's locations comprise 375 acres.

Mr. Rittenhouse estimates that there is some 10,000,000 tons of iron ore on the property. The deposit is what is known as bog-iron and is a brown hematite in character. He says the deposit is very similar to the Alabama deposits of bog-iron and analysis show it is well within the Bessemer limit.

"My opinion in connection with this deposit," said Mr. Rittenhouse, "I believe is entirely justified, not only from the character of the deposit, but from general conditions and the growing demand for a railway through that district, thus furnishing easy transportation for the ore.

"There will either be a branch line of the G. T. P. to tap this resourceful district, or a private line will be built, and it can be constructed at not too heavy expense. Beside the iron ore deposits there are copper, coal, other minerals and timber areas which will furnish tonnage for a railway."

The "Daily Province" says: That a complete mineral survey of the province with a view to carrying out mining operations on a large scale will probably be carried out in British Columbia next year by a \$20,000,000 company with such men as Sir William Mackenzie and Mr. William C. Corey of steel fame at its head, was the statement made yesterday by Mr. Ralph Stokes, a well-known mining man of New York. Mr. Stokes is in the West at present in the interests of this company and has just returned from Calgary where he has been looking into the prospects of developing the oil strikes near that point. Mr. Stokes, when seen would make few statements, but during the course of his conversation let drop remarks that would indicate that development on a large scale will be undertaken by the company he represents.

The Spokane Spokesman-Review correspondent at Republic, Washington, recently wrote: The Belcher company of Belcher camp is shipping ten carloads of ore per week to the Granby smelter at Grand Forks, B.C.

The name of the Hummingbird Gold Mines Co., Ltd., has been restored to the register of joint stock companies by order of the Chief Justice made on Oct. 21.

The flotation process plant at the Walaroo & Moonta mines, in South Australia is recovering 95 per cent. of the copper content of the crude ore mined there.

The production of asbestos in Canada in 1912 was 111,561 tons, valued at \$3,117,572, as compared with 1911, of 101,393 tons valued at \$2,922,062. The whole of this production was made by the Province of Quebec.

Under the new tariff of the United States, the duty on lead-bearing ores foreign is $\frac{3}{4}$ c a lb. on the lead therein, as compared with $1\frac{1}{2}$ c under the old tariff.

The new duty on zinc ores entering the United States is 10 per cent. on the zinc content.



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve covering lands formerly held under expired Timber Licences Nos. 39195 and 38196, situated in the vicinity of Powell Lake, New Westminster District, is cancelled, and that said lands will be open for entry by pre-emption on Monday, the 3rd day of November, 1913, at the hour of 9 o'clock in the forenoon.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B. C.

aug. 2

nov. 1



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve covering lands formerly held under expired Timber Licences Nos. 38195 and 38196, situated in the vicinity of Powell Lake, New Westminster District, is cancelled, and that said lands will be open for entry by pre-emption on Monday, the 3rd day of November, 1913, at the hour of 9 o'clock in the forenoon.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department, Victoria, B. C.,
30th July, 1913.



NOTICE OF CANCELLATION OF RESERVE.

NOTICE is hereby given that a reserve covering certain lands situated in the vicinity of North Thompson River, Kamloops District, formerly held under expired Timber Licences Nos. 11267 and 13758, notice of which appeared in the B. C. Gazette on the 27th of December, 1907, is hereby cancelled and said lands will be opened to entry by pre-emption on Monday, the 8th day of December, 1913, at 9 o'clock in the forenoon; application to be made to the Government Agent at Kamloops, B. C.

ROBT. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B. C.,

27th August, 1913.

aug. 30

oct. 25



CANCELLATION OF RESERVE.

NOTICE is hereby given that the reserve, notice of which appeared in the B. C. Gazette on the 27th of December, 1907, is cancelled in so far as it relates to lands formerly covered by Timber Licence No. 41206, known as Lot 456, Sayward District, and same will be opened to entry by pre-emption on Monday, the first day of December, 1913, at the hour of 9 o'clock in the forenoon.

The lands in question will shortly be subdivided into suitable parcels for pre-emption, and all applications must be made in accordance with such subdivision, particulars of which will be available at the office of the Government Agent, in Vancouver, to whom applications must be submitted.

R. A. RENWICK,

Deputy Minister of Lands.

Lands Department,
Victoria, B. C.,

12th August, 1913.

aug. 16

nov. 15

Revised figures show the value of the mineral production of Canada in 1912 to have been \$135,048,296, as compared with \$103,220,994 in 1911.

FOR SALE

Three 125-ton copper smelting furnaces. Four Cornersville blowers, capacity. 752 cubic feet per revolution, direct connected to Erie engines. Three converter stands and fourteen shells. 84 x 126, for electric drive.

Address

The Canadian Copper Company
Copper Cliff, Ontario.

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V. LLOYD-OWEN, SEC. TREA.

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One double-drum hoist, drums 8 ft. diameter, 6 ft. 3 in. wide, frame 24 feet x 11 ft., 6 ft. cylinders, 14 x 18, capacity, 2½ tons at 700 feet per minute. One 100 h. p. and one 75 h. p. boiler, both tested to 100 lbs. pressure. One Northey sinking pump, 8 in. x 4 in. x 12 in. One Worthington duplex pump, 20 x 10 1-4 x 10. One 40 h. p. Jenckes Machine Company engine, 10 x 14.

Address

The Canadian Copper Company
Copper Cliff, Ontario.

Two thousand tons of ore was shipped to Trail smelter from Republic mines last month.

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"Prospect in the older district," is the advice given by Mr. Stanley A. Easton, in a recent interview, and is a sound advice. As he points out, the man who goes into a new district takes chances not only on finding ore but on a multitude of other things. In new territory a mining company must provide transportation, food supply, water, power, and all the accompaniments of a complex civilization. In the older districts these are provided and the engineer can devote his whole attention to finding and mining ore.—Slocan Record.

LEAD BOUNTIES TO BE CONTINUED.

The Dominion government has decided to continue the payment of bounties upon lead produced in Canada until June 30, 1918. The bounty is based upon the price of lead in London.

To Surveyors and Prospectors

Messrs. TEMPLE & TRACY
having purchased the Ranching and Store business near Hanceville, B.C. formerly owned by Mr. Norman Lee, wish to announce that they are prepared to

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Provisions, Tools and Pack Horses

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INDEX

Subject:—	Page
Recent Developments in the Alberta Oil Fields	5
Recent Strike of Oil and Gas in Western Alberta	6
Uncommon Minerals	7
Franklin Camp, North Fork of Kettle River	8
Shipment of Ore from Union Group.	11
Trip of 1,000 Miles in Lower Interior	12
Hedley Gold Mining Co.'s New Hydro-Electric Power System	13
Van-Roi Mining Co., Ltd.....	14
Le Roi No. 2, Ltd.....	14
Ore Receipts at Trail Smelter.....	14
Hematite Ore in Nicola Valley.....	14
Mining West Fork of Kettle River..	14
Personal and General.....	15
Revised Tariff Favors B. C.....	17
Treatment of Zinc-Silver Ores.....	17
Editorial	20
Latest Metal Markets.....	21
Coast and Island Mining—	
Latest News from Portland Canal.	22
First Annual Meeting Vancouver Chamber of Mines.....	23
Red Cliff Mine to be Re-opened in Spring	23
Portland Canal Tunnels, Ltd.....	24
Britannia Mine, Howe Sound.....	24
Railway in Portland Canal District	26
Experts in Portland Canal Division	27
Annual Meeting West Kootenay Power and Light Co.....	27
Dr. Young Again Visits Atlin.....	27
The Oregon, Near Hedley.....	28
Dredging for Gold on Lardeau River	28
Report on Island Coal Miners' Strike	28
Ben Hur Republic	29
Reduction of Zinc Ores.....	29
Iron Deposits to be Developed....	29
Freight Rates to Eastern Smeltery	29
U. S. Will Value Zinc at Port of Entry	33
New Style Hoisting Car.....	33
Ajax Mine Is Promising Property...	35
Picketing Illegal	36
Cartoon from "Punch"	36
Rescue Car Work	37

GRAFT.

It is stated that the coming report of the commission investigating the National Transcontinental construction will show, among other things, how one contractor sublet his contract, and made \$750,000, without doing a day's work. Perhaps here we have a clue as to the meaning of the Globe's query, "Has the change from Laurier to Borden made you rich?"—Toronto Mail and Empire.

Alterations have been made to the Bluebell mill which makes it possible to save most of the zinc values in the ore. It will be stacked pending the securing of a satisfactory market.

MINING STOCK QUOTATIONS.

Supplied by Waghorn, Gwynne & Co., Stock-Brokers, Vancouver, B.C.

LISTED STOCKS.

Spokane.

	Bid.	Asked.
Ajax .....	.083	.17
Alameda .....	.003	.01
Alhambra .....	.043	.10
Ambergris .....	.05	.073
Am. Comd'r .....	.003	.013
B. C. Copper	4.25	4.50
Black Horse .....	.013	.023
Bullion .....	.01	.02
Bullwhack .....	.48	.52
Caledonia .....	.233	.26
Canadian Cons.	45.00	75.00
Carbonate Hill .....	.013	.04
Copper King .....	.023	.023
Copper King (Che.) ..	.43.00	.28
Federal, pref.	16.00	23.00
Federal, com. ....	.05	.063
Gertie .....	.68.00	70.00
Granby Smelter .....	.01	...
Happy Day	2.20	...
Hecla .....	.073	.093
H. E. M. ....	.023	.023
Hypotheek .....	.013	...
Idaho Giant .....	.02	.023
Idora Hill .....	.37	.41
International C. & C. ..	.073	.09
Jack Waite .....	.01	.03
Laclede .....	.013	.023
Lucky Calumet .....	.133	.17
Lucky Jim .....	.223	.263
Marsh .....	.15	.183
McGillivray C. & C. ....	.02	.023
Missoula Copper .....	.013	.023
Monitor .....	.043	.053
Moonlight .....	.013	.023
Nabob .....	.25	.33
Nugget Gold Mines .....	.01	.03
Oom Paul .....	.133	.19
Puritan .....	.853	.90
Rambler-Cariboo .....	.04	.053
Rambler Cariboo Ext. ....	.023	.053
Silver Cable .....	.013	.023
Snowshoe .....	.39	.45
Snowstorm	1.35	1.47
Standard S. L. ....	.033	.04
Stanley	1.92	1.97
Stewart	1.25	...
Tamarack Con. ....	.60	1.00
United Copper .....	.16	.193
Utica		

Industrials

	Bid.	Asked.
Wash. Water Power Co. ..	133.00	136.50
Western Union Life	135.00	145.00
Interstate Con. Tel.	20.00	...
Tamarack and Custer	1.01	1.26

Cobalt Stocks

	Asked.	Bid.
Bailey .....	.093	.093
Beaver Consolidated .....	.403	.393
Buffalo	2.30	2.10
Chambers-Ferland .....	.29	.233
Great Northern .....	.09	.093
City of Cobalt .....	.39	.353
Conlagas	9.25	9.10
Crown Reserve	3.65	2.58
Foster .....	.11	.093
Gifford .....	.063	.06
Gould .....	.033	.033
Green Meehan .....	.013	.013
Hargrave .....	.083	.08
Mc Kin. Dar. Savage	1.98	1.97
Nipissing	9.15	9.00
Ophir .....	...	.04
Otis .....	.02	.013
Peterson Lake .....	.253	.253
Rochester .....	.043	.04
Right of Way .....	.083	.08
Silver Leaf .....	.043	.04
Temiskaming .....	.34	.333
Trethewey .....	.34	.323
Wettlaufer .....	.15	.15

Porcupine

	Asked	Bid
Crown Charter .....	.003	.003
Dome Extension .....	.063	.06
Foley O'Brien .....	...	.16
Hollinger	15.50	15.15
Jupiter .....	.37	.36
North Dome .....	.60	...
Pearl Lake .....	.30	.293
Porc. Imperial .....	.023	.02
Preston East D.04	.033
Rea Mines15
Swastika10	.093
Vipond20	.193

Sundry

C. G. F. S.05	.043
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Listed Stocks.

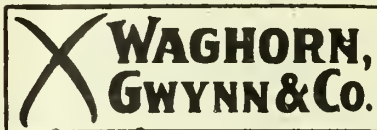
	Bid.	Asked.
Dominion Trust Co.	106.00	112.00
Great West Per., A.	127.00	...
International C. & C. ....	.30	.34
Vancouver Development ..	11.00	...
Alberta Canadian Oil .....	...	.02
Alberta Coal & Coke02
Nugget Gold Mines25
Portland Canal023

Unlisted Stocks.

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B. C. Trust Co.	102.00	...
Granby	73.00	76.00
Northern Crown Bank	91.00
National Finance, X.D.	93.00
Pacific Coast Fire, X.D.	93.00	103.00
Pacific Loan Co.	20.00	...
Canada Cons'd, M. & S.	82.00	93.00
American-Canadian Oil .....	...	.04
Amal. Dev. ....	...	.003
B. C. Refining Co. ....	.55	...
Can. Call Switch .....	...	.30
Can. Pac. Oil of B. C. ....	...	.04
Coronation Gold .....	...	.45
Glacier Creek .....	...	.05
Grand Trunk Lands .....	...	.05
Kootenay Gold .....	...	.10
Lucky Jim Zinc .....	...	.05
McGillivray Coal .....	.143	...
Nicola Valley C. & C.	15.00
Rambler Cariboo26
Snowstorm20	...
Standard Lead	1.50	1.65
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It is hoped that all may join, so that a complete register of old public school boys now in Vancouver Island may be obtained.

Old members who have not done so are requested to notify the Secretary of any change of address.

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U. S. WILL VALUE ZINC AT PORT OF ENTRY.

The Nelson "Daily News" says.

Under the new United States tariff the duty of 10 per cent. ad valorem on zinc ores will be charged on the estimated value of the zinc contents at the port of entry, according to an official copy of the act which has been received by W. S. Riblet, United States consular agent at Nelson. Under the old tariff the duty on zinc ores containing from 10 to 20 per cent. zinc was one-quarter cent per lb.; from 20 to 25 per cent. zinc, it was one-half cent per lb.

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and over 25 per cent. zinc contents it was 1 cent per lb. It was under the last heading that zinc ores from British Columbia had to pay duty, and with the price of zinc at 5 cents per lb. the new tariff means that the duty on 50 per cent. zinc ore is cut \$5 per ton of ore.

On lead ores the duty has been cut from 1½ cents per lb. on lead contents to three-quarters of a cent per lb.

Copper ores, copper matte, blister copper, and ore bullion remain on the free list.

All varieties of coal and coke, and coal and coke products used for fuel, have been included in the free list.

NEW STYLE HOISTING CAGE.

George S. Rice, chief mining engineer of the United States Bureau of Mines, has dedicated to public use a patent just issued by the Government for a hoisting cage, which is primarily for use in rescue work, but can be used for other purposes.

Mr. Rice, in describing his invention, states that it has for its object the provision of a novel cage, which shall have peculiar advantages in regard to portability and ease of assembling and disassembling. He adds that, although not limited to such use it is of especial utility in mine rescue work as an emergency cage.

"It frequently happens in case of mine accidents that the regular hoisting equipment may be so damaged or disarranged that it can not be used," said Mr. Rice. "In such cases the provision of an emergency cage, which can be made ready in a few minutes, will greatly facilitate the work of rescue parties. The cage comprises a collapsible frame, consisting of two flat bars, each bent into a form which may be termed approximately elliptical and the ends welded together, thus forming endless members which serve not only as uprights, but also as top and bottom frame parts.

"The inclosing members for the cage comprise horizontally arranged hoops, each bolted to the upright frame members, thus serving both to brace the frame and to form skeleton sides

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adapted to prevent falling or displacement of load.

"It will be seen that the generally elliptical contour of the cage will greatly facilitate its travel past obstructions in the shaft, and that the curved upright portions of the frame will serve to a certain extent to guide shoes. In large cages it may be desirable to use more than two of these frame members."

Mr. Rice claims in this invention:

"A supporting frame for a hoisting cage comprising a plurality of frame members, and connecting means adapted to permit relative movement of said members into a collapsed position.

"A collapsible frame for a hoisting cage comprising a plurality of frame members of different dimensions adapted to lie one within another when in the collapsed position.

"A frame for a hoisting cage comprising a plurality of frame members, so connected as to be capable of pivotal movement relative to each other approximately about the vertical axis of the cage.

"A frame for a hoisting cage comprising a plurality of endless frame members and means for pivotally connecting said members.

"A collapsible frame for a hoisting cage, comprising a plurality of endless frame members of approximately elliptical outline and means for pivotally connecting said members.

"In a hoisting cage, a collapsible frame and removable inclosing means supported by said frame.

"A hoisting cage comprising a rigid collapsible frame and a detachable platform supported by said frame.

"A hoisting cage comprising a collapsible frame, a platform, and detachable bracing members adapted to connect the parts of said frame and hold them in extended position.

"A hoisting cage comprising a collapsible frame, a platform, and substantially hoop-shaped members adapted to connect the parts of said frame.

"A hoisting cage comprising frame members, means connecting said members and forming skeleton sides, a platform and a bonnet, said sides, platform and bonnet being detachably connected to the frame members.

"A hoisting cage comprising a plurality of endless upright frame members, connecting members forming skeleton sides, a cross-brace for the top of the frame, a platform and cushioned means for attachment of a hoisting cable.

"In a hoisting cage, the combination of a frame and a bracing member for the frame comprising a plurality of bars with their ends adapted for attachment to the frame, said bars being pivotally connected intermediate their ends."

In 1912 Ontario produced minerals of a total value of \$51,985,876, as compared with \$42,796,162 in 1911.

The Canadian Mining Journal says: "The changes in the Customs tariff announced by the Minister of Finance include 'miners' rescue appliances, designed for emergency use in mines, where artificial breathing is necessary in presence of poisonous gases, and automatic resuscitation apparatus for artificial breathing, to aid in saving human life.' These are placed on the free list. For some time past the duty on mine-rescue apparatus has been rebated upon application, but it is much more satisfactory to have these appliances placed definitely on the free list, as they are in every other country of importance. The provincial laws of several of the Western Provinces compel the provision of rescue appliances at mines, and it may be asked whether the Federal Government could in any case collect customs duties on articles which are required by law to be provided, when such articles are not manufactured in Canada."

In connection with this matter, it is of interest to recall that at the Seventh General Meeting of the Western Branch of the Canadian Mining Institute, held in Vancouver on February 25, 1910, it was resolved, on motion of Mr. W. H. Trewartha-James, seconded by Mr. W. M. Brewer, "that the Dominion Government be requested, through Hon. Mr. Templeman, Minister of Mines, to remove any existing customs duties on oxygen breathing apparatus for life-saving in coal mines." Among those who took part in the discussion preliminary to adoption of this resolution were, beside the mover and seconder, Messrs. Wm. Fleet Robertson, S. J. Castleman and R. G. Drinnan.

The Nelson "Daily News" states that for the eleven expired months of this year the total quantity of zinc ore shipped by Slocan properties is 6545 tons. The chief producers are the Van-Roi, 677 tons; Standard, 3104 tons; Lucky Jim, 1241 tons; Rambler-Cariboo, 1290 tons.

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AJAX MINE IS PROMISING PROPERTY.

The Kaslo Kootenian of the 3rd Inst. says:

The Ajax, a Ferguson Mines Co. property that caused a sensation in the northern end of the district last winter by reason of the finding of a large body of good ore near the surface, is maintaining shipments at the rate of about two carloads per month, and the indications are that the property will be able to maintain that gait for some time to come.

The Ajax adjoins the famous Nettie L. on the south, and some development was done on the property several years ago, but without any results worth mentioning. A crosscut tunnel encountered a ledge supposed to be the Nettie L. ledge, but a considerable expenditure in drifting led to the conclusion that there was little mineral on the ground.

At a point higher up the hill, however, the superintendent, F. C. Merry, decided last fall to undertake further prospecting, the indications being that there was a mineral bearing ledge somewhere in that locality. No great

expenditure was required to prove this theory a correct one, but the ground appeared broken and the ledge a somewhat irregular affair, though promising. Almost by accident a large body of good shipping ore was run into, together with a very large quantity of low grade stuff suitable only for milling. The management immediately began stoping and has kept up fairly regular shipments since then, and there appears to be plenty more in that immediate vicinity yet. Strange to say a short tunnel or two had been driven on the property, near which the late ore discoveries have been made, but the seekers after mineral wealth of the years gone by, had missed finding it by a half drill's length, the holes made by their drills having been noted this spring in the ore.

At the present time not sufficient work has been done to arrive at any very definite conclusion as to the nature of the ground. It is extremely irregular, but is clearly ledge matter that is in a badly shaken condition. The ore shoot has been followed up for about one hundred and fifty feet. The ore body is irregular, widening out to a width of eight or ten feet in places and then narrowing in once more. It is possible, in several places to stand upright in chambers, whose walls are composed of ore, the effect of the reflected candle light being decidedly pretty. A considerable proportion of the ore has to be left on the dump for the time being, as some of it is zincy or too low grade to make it worth while sending to the smelter until it can be milled. A fairly good shipping product is obtained by careful hand sorting.

The theory generally believed is that the ledge recently opened up is the surface outcropping of a big vein that exists somewhere a short distance back in the mountain, and that it is faulted. But work has not yet advanced sufficiently to make certain in regard to that, but if this is taken eventually to be the right explanation, a continuation of the crosscut tunnel started several years ago will be made, with the object of picking up the ledge in the solid formation further in.

The ore is taken down to Five Mile by the Nettie L. tram and thence to Ferguson and Trout Lake by wagon.

Every indication points to the fact that there is a body of ore somewhere on Ajax ground that is sufficiently large, if opened up, to make the property one of the biggest mines in the country.

All three blast furnaces are now in operation at the British Columbia Copper Co.'s smeltery at Greenwood, Boundary district. For nine months of the year one furnace was not in use and two were run at only 75 per cent. of their smelting capacity, owing to the supply of ore having been insufficient to keep all the furnaces running at full capacity.

Saskatchewan's mineral production was increased from \$636,706 in 1911 to \$1,165,642 in 1912.

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PICKETING ILLEGAL.

An interesting development in connection with the Crown prosecution of striking coal miners has taken place at Nanaimo. Among the many arrested for breaches of the law were seven men who appeared before the police magistrate charged with intimidation. Counsel for the accused, claiming that he was authorized by the United Mine Workers of America to do so, offered to give an undertaking that if the prosecution of these men were withdrawn, there will not be any more picketing in connection with this strike by members of the U. M. W. of A. The Privy Council, the highest court in the British Empire, recently gave a decision that picketing of any kind in Canada is illegal. This being so, counsel for the accused gave the undertaking above mentioned. The Crown prosecutor warned the accused that notwithstanding he had consented to withdraw the charge against them, they continue liable to prosecution under it, but on the distinct understanding that there will not again be picketing of any kind, he would not now proceed further in the matter. The magistrate thereupon consented to the withdrawal of that particular charge.

On September 19, Mr. Justice Cassells, of the Exchequer Court, heard argument in the case of the Bonanza Creek Gold Mining Co. vs. the King. The plaintiff company in 1908 filed a petition of right, claiming for the Crown damages amounting to \$17,619,034, for certain alleged wrongful acts of the Department of the Interior and its officers in granting placer claims in Yukon territory within the boundaries of areas leased to said company, and in preventing the company from conducting hydraulic mining operations on such leased ground. The Crown disputes the plaintiff company's alleged right. Judgment has been reserved.



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(From Punch, London, Eng., Sept. 10, 1913.)

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A shipment of five cars of zinc ore was made recently to Oklahoma from the Noble Five mine in the Slocan country. After payment of freight, duty, etc., the ore returned \$1,077 per car. There is a great quantity of zinc ore in this district, and if it can be made to pay, should prove a valuable industry for the Slocan. A shipment of seventeen cars of high-grade zinc ore was also made from the Lucky Jim property, but they have not given out the figures for returns on this lot.

"The last lingering doubt I had entertained concerning the future greatness of the mining industry was dissipated as soon as I laid eyes on Rocher de Boule mine," said H. W. C. Jackson, publicity man for the New Hazelton District Mine Owners' Association, on his return, a week ago, from a five days' trip of inspection to the mines on Rocher de Boule mountain. "It is already a mine capable of large production, and promises with further development to prove as big a bonanza as any yet brought to light in this province."—Omineca Herald.

Mrs. Pankhurst complains of "a press boycott." We wonder what her idea of real publicity would be.—New York Sun.

RESCUE CAR WORK.

Automobile rescue cars will soon be an auxiliary to the railway cars now in use in the rescue service of the United States Bureau of Mines. A test car of the automobile apparatus is now being built for the Pittsburg station of the Bureau of Mines. This will be the first automobile ever designed for mine rescue service in America, although the method has been tried in England, and has proved a success. The automobiles are especially designed for runs to mine disasters of less than 100 miles distance, and it is believed will be the means of saving many lives which might be lost while waiting the arrival of the less mobile railway cars. In appearance the automobile rescue cars resemble the automobiles

used as police patrols, with the exception that along the sides oxygen tanks are placed, and in the rear fire extinguishers are hung. They will each carry axes, lanterns, a pulmotor, and first-aid and resuscitation apparatus.

It is expected that the amount of dividends paid in 1913 by metalliferous mining and smelting companies operating in British Columbia will, by the end of the year, have reached an aggregate of fully \$2,500,000, which will be more than twice as much as the total declared in 1912. The companies and the approximate amounts they will have paid, respectively, are as follows: British Columbia Copper Co., \$88,756; Consolidated Mining and Smelting Co., \$464,416; Granby Consolidated Co., \$899,911; Hedley Gold Mining Co.,

\$360,000; Le Roi No. 2., Ltd., \$43,200; Standard Silver-Lead Mining Co., \$650,000. In 1912 the Granby Co. did not make any dividend distribution; the British Columbia Copper Co. paid twice as much as in 1913; the Hedley Co.'s total was the same as is expected for this year, while the three other companies each paid less in 1912 than in 1913. Altogether, the year's results in regard to net profits may be taken as better than for a number of previous years.

Thousands of tons of provisions and supplies, including mining, drilling and sawmill outfits, have been shipped from Edmonton to the outposts of civilization, during the last ninety days, and much more equipment will go forward by river scows and pack trains before the close of the season. Seventeen parties are prospecting in the Canadian Rockies, west of Edmonton, but most of the work at present is being carried on in the northern territory.

William Gordon, a pioneer of the Fort McMurray district, said in Edmonton recently that prominent English and American financial houses are backing several of the prospecting parties.

The mineral production of Yukon territory in 1912 was of a total value of \$5,933,242, of which \$5,549,296 was for gold. The increase over 1911 was nearly \$1,226,000.

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John Knudson and H. B. Meausette have a deposit of Iceland spar at the mouth of the Ashnola river which goes high in calcium carbonate. Two analyses were made which yielded 97.16 and 99.8 per cent. of carbonate of lime.

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SOME FARM.

There is always a great deal of attention paid to what London newspapers say about matters Canadian. Just how intelligent some British comment is may be judged from Mrs. Humphry Ward's description of a "farm near Hamilton running down to Lake Superior." Some farm, that.—Toronto Star.

A press despatch sent from Ottawa about the middle of August and published in British Columbia newspapers gave the information that "Canada's mineral production for the last fiscal year amounts to over \$133,000,000, which is an increase of \$30,000,000, or 29 per cent., over the figures which were presented for the preceding year." This was somewhat belated news, for the "Preliminary Report of the Mineral Production of Canada During the Calendar Year 1912," prepared by Mr. John McLeish, Chief of the Division of Mineral Resources and Statistics, Ottawa, was submitted to Dr. Eugene Haanel, Director of Mines, Ottawa, on February 27 of the current year, and on March 5 was distributed at the Annual Meeting of The Canadian Mining Institute, held in Ottawa. A one-column excerpt from Mr. McLeish's "Preliminary Report" was printed in the B. C. Mining Exchange for February, 1913 (see pp. 27-8). It would appear as if provincial newspapers were misled when they published five-months-old stuff as late news.

Alberta's production of coal in 1912 was larger than that of British Columbia, namely, 3,240,577 tons against 3,208,997 tons.

DEVELOPMENT ON VANCOUVER ISLAND.

The Copper Mining Co., a Spokane corporation, recently organized, with Conrad Wolfe president; F. R. Wolfe, vice-president, and Sidney Rosenhaupt, secretary-treasurer, the three composing the directorate, has taken a bond on five groups of five claims each, on the north end of Vancouver island, 15 miles from Port McNeil, and will begin development work at once.

"A FRIEND AT COURT."

It is true that Canada has borrowed freely. But it should be realized that most of the money has been thoroughly well expended, and will bring an immense output of natural wealth in a short time. Already the productive power of the country has grown in a wonderful manner. In considering the situation in Canada it should not be forgotten, first, that the Canadian banks hold large cash balances, both in London and in New York; secondly, that the Canadian Pacific railway is in a position to raise any amount of capital it can reasonably expend; and thirdly, that the credit of the Canadian government is of the highest, and that the Canadian government can rely on British investors for money if it is really needed.—London, Eng., Statist.

A. D. McKay and Matt Little have uncovered an excellent showing of zinc ore on their claims on Hudson Bay mountain, says the Omineca Miner.

VICTORIA TERMINAL RAILWAY AND FERRY CO. VICTORIA AND SIDNEY RAILWAY TIME TABLE No. 14

NORTH BOUND

SOUTH BOUND

No. 7 First-Class Sunday Only	No. 5 First-Class Except Sunday	No. 3 First-Class Daily	No. 1 First-Class Except Sunday	Distance from Victoria	EFFECTIVE 7.00 A.M. JULY 25th, 1913	No. 2 First-Class Except Sunday	No. 4 First-Class Except Sunday	No. 6 First-Class Except Sunday	No. 8 First-Class Saturday Only	No. 10 First-Class Sunday Only
A.M.	P.M.	P.M.	A.M.			A.M.	A.M.	P.M.	P.M.	P.M.
De. 10.00	De. 5.00	De. 2.00	De. 9.00	—	..... Victoria	Ar. 8.30	Ar. 11.30	Ar. 4.30	Ar. 7.15	Ar. 6.00
" 10.05	" 5.05	" 2.05	" 9.05	.60	..... Hillside	" 8.25	" 11.25	" 4.25	" 7.10	" 5.55
" 10.20	" 5.20	" 2.20	" 9.20	5.26	..... Royal Oak	" 8.10	" 11.10	" 4.10	" 6.55	" 5.40
" 10.25	" 5.25	" 2.25	" 9.25	6.34	..... Beaver Lake	" 8.05	" 11.05	" 4.05	" 6.50	" 5.35
" 10.35	" 5.35	" 2.35	" 9.35	8.91	..... Elk Lake	" 7.55	" 10.55	" 3.55	" 6.40	" 5.25
" 10.40	" 5.40	" 2.40	" 9.40	10.69	..... Keating	" 7.50	" 10.50	" 3.50	" 6.35	" 5.20
" 10.45	" 5.45	" 2.45	" 9.45	12.83	..... Saanichton	" 7.45	" 10.45	" 3.45	" 6.30	" 5.15
Ar. 11.00	Ar. 6.00	Ar. 3.00	Ar. 10.00	17.10	..... Sidney	De. 7.30	De. 10.30	De. 3.30	De. 6.15	De. 5.00

SPECIAL RULES

North bound trains will have right of track over trains of same or inferior class South bound.

Trains and engines will not exceed ten miles per hour over bridges between Hillside and Beaver Lake, and will approach all spur track switches with train under complete control.

The Standard Rules of the Great Northern Railway have been adopted by these Companies, and employees will be governed thereby.

This time table is not intended for the information of the public, nor as an advertisement of the time of any train. The Companies reserve the right to vary from it at pleasure.

F. VAN SANT, Superintendent.

When Answering Advertisements Please Mention B. C. Mining Exchange.

The West Canadian Deep Leads has put in a sawmill two miles beyond its camp, on Bear Lake road, Caribaa. It is intended to cut about 90,000 ft. of lumber for use about the company's mine, which should be working shortly with a full force of men.

At the meeting of the shareholders in the Aufeas Gold Mines, Ltd., held late in July, the directors were re-elected, as follows: H. V. Dardier, president; L. B. Cleaves, vice president; A. E. Raab, secretary-treasurer; W. T. Hireen, and L.

Dividends paid this year by four properties in the Boundary and Kootenay mining district have reached a total of \$932,675, made up as follows: British Columbia Copper company, \$88,675; Standard mine, \$275,000; Granby company, \$449,000; Hedley Gold Mining company, \$120,000.

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BRITISH COLUMBIA

THE MINERAL PROVINCE OF CANADA

Gold, Silver, Lead, Copper, Coal, Coke, Iron, Zinc, Platinum, etc.

The aggregate value of the Mineral Production of British Columbia is

\$430,137,522

As follows: Placer Gold, \$72,194,603; Lode Gold, \$70,859,022; (Total Gold, \$143,053,625); Silver, \$33,863,940; Lead, \$27,520,753; Copper, \$73,723,562; Zinc, Iron, etc., \$1,528,403; Coal and Coke, \$132,871,155; Building Stone, Brick, Cement, etc., \$17,576,084.

The substantial progress of the Mining Industry of the Province is strikingly exhibited in the following table, which shows the value of production for successive five-year periods:

For all years to 1892, inclusive.....	\$ 81,090,069
For five years, 1893-1897.....	31,420,396
For five years, 1898-1902.....	77,218,073
For five years, 1903-1907.....	109,797,744
For five years, 1908-1912.....	130,611,240

Aggregate value of Mineral Production..... **\$430,137,522**

A Great Mining Region

British Columbia is pre-eminently **A GREAT MINING REGION**. Its mines already yield virtually all the Lead mined in Canada, more than one-half the Gold, nearly three-quarters of the Copper, fully one-quarter of the Coal and about one-tenth of the Silver, and a share of some other minerals. This high rank has been reached notwithstanding that prospecting of even the most desultory character has been carried out only on a small, almost insignificant, part of the area, and this chiefly in districts lying south of the main line of the Canadian Pacific Railway.

Minerals Widely Distributed Throughout British Columbia

COAL occurs in vast quantities. The recently published estimate of a well-known Dominion geologist places the coal content of the various known coal areas of the Province at: Anthracite, 61,000,000 tons; bituminous, 39,674,000,000 tons; lignite, 490,000,000 tons; total, 40,225,000,000 tons. Coal mines are being worked in Southeast Kootenay, Similkameen, Nicola Valley, Vancouver Island, and others are being opened on Queen Charlotte Islands, Skeena River, and other widely-separated parts of the Province.

GOLD is also found, practically all over the Province. The largest known Placer Gold fields are in Cariboo and Atlin districts. An official estimate of gold-bearing gravels in Quesnel division of Cariboo district alone is 2,500,000,000 to 3,000,000,000 cubic yards, containing \$300,000,000 worth of gold. Lode Gold is now obtained chiefly from mines in Rossland, Nelson, Boundary, and Similkameen districts. The Coast district gives every promise of also yielding much lode gold when more mining shall be done in it.

SILVER in comparatively large quantity comes from Slocan, and Boundary mines. Lardeau, Rossland, Nelson and Coast district mines also produce silver. Much more is expected from mines now being developed in Portland Canal and Observatory Inlet and the Skeena and Omineca districts.

LEAD is mined in greater amount in East Kootenay than other parts, but Slocan, Ainsworth, Nelson and Lardeau mines also produce this metal. Skeena district gives promise of producing lead ere long.

COPPER mines in Boundary district are the largest producers of this metal in Canada. Rossland and Coast districts also yield copper. Kamloops and Similkameen are both known to have large deposits of copper ores awaiting utilization.

ZINC AND IRON will yet become important contributors to the mineral production of British Columbia, there being much ore containing one or other of these metals, in various parts of the Province.

OTHER MINERALS occur, though little has yet been done to utilize them. Among those found are: Cinnabar (Mercury), Pyrites, Scheelite, Tungsten, Molybdenum, Platinum, Mica, Gypsum, Magnesite, Chromite, Asbestos, Petroleum, etc.

REDUCTION WORKS include Copper and Lead Smelteries, Stamp Mills, Silver-Lead and Zinc Concentrating Mills, Electrolytic Lead Refinery, etc. The largest Copper Smeltery in the British Empire is that of the Granby Company at Grand Forks, B. C. Smelteries and Mills are equipped with modern machinery and metal-saving appliances.

CAPITAL—Capital can now find here many excellent opportunities for investment, as the value placed on mines and undeveloped properties has reached a reasonable basis. If proper business care is used, and the experiences of competent men utilized, these investments should be safe as well as profitable.

MINERAL LANDS—Mineral lands are open to location to any person over 18 years of age, who has obtained a free miner's certificate, and perfect title to lode claims can be easily secured after \$500 worth of work has been done per claim.

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Promising Outlook for Oil Development in B.C.—Illustrated.

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VANCOUVER, B.C., MARCH, 1913

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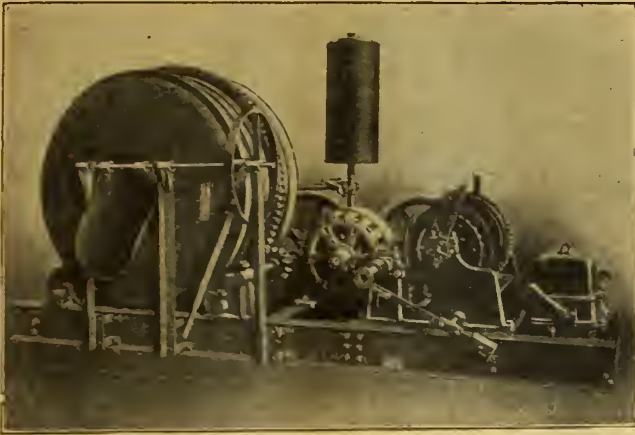
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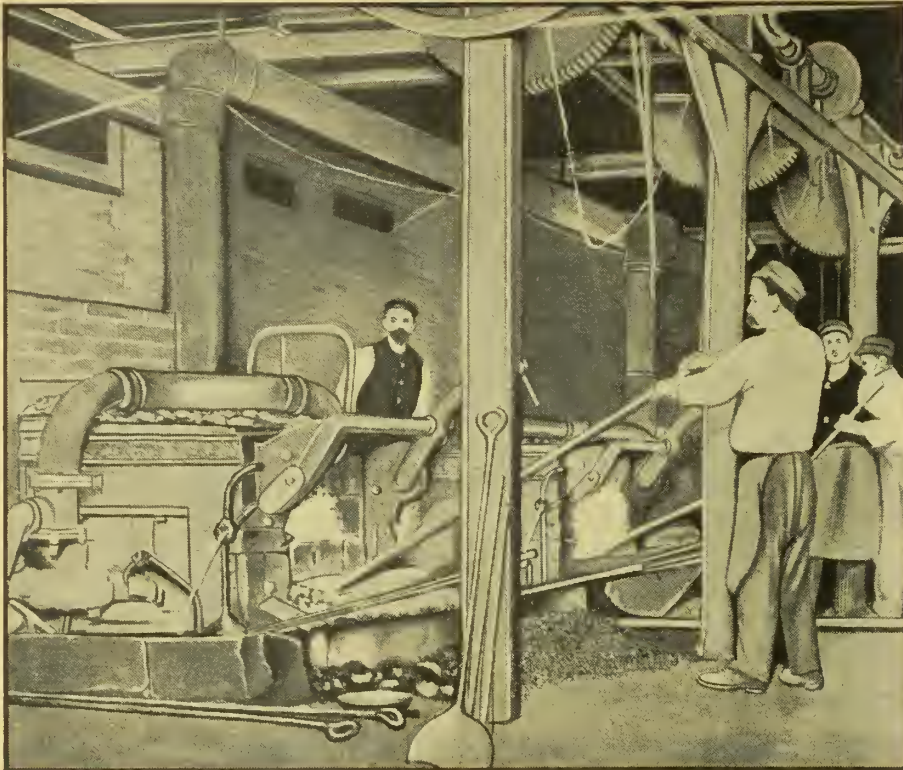
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The map is published in three colors and shows Timber Licenses, Coal Licenses, Pre-emption Records, Lot Sections, Railway Belt, Trails and Roads, District Boundaries, Indian Reserves, Light House Reserves.

We believe every Real Estate firm doing business on the Island will find this map invaluable as it contains in a comprehensive form information that heretofore has been both difficult and expensive to obtain.

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609 Grain Exchange Bldg., Calgary, Alta.	J. F. PORTER, "

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THE B.C. Mining Exchange and Engineering News

Published entirely

in the interest of

British Columbia's

Greatest Asset—

Her Mineral Wealth

LATEST NEWS FROM MAINLAND
COAST AND ISLAND MINES

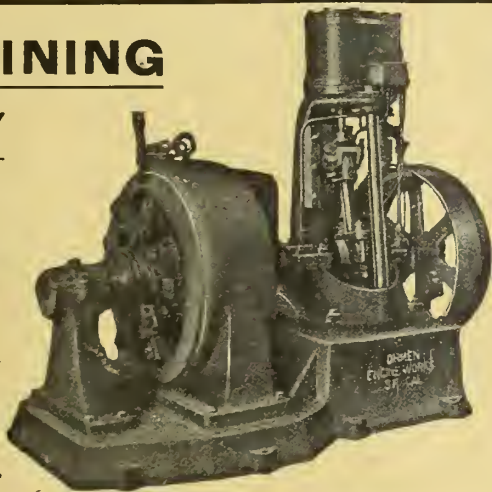
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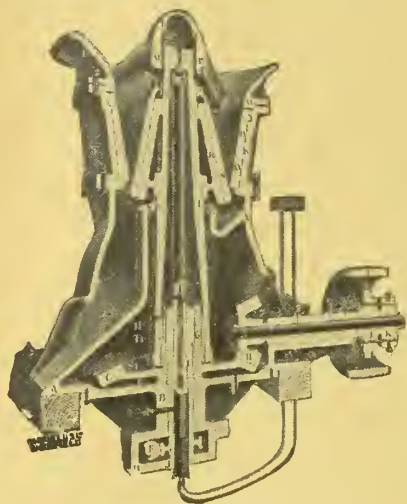
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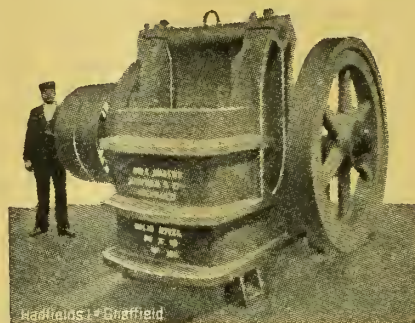


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Everyone wants a picture of the members of the Government of Canada. The "News-Advertiser" has had prepared for the exclusive use of its readers in this province a large engraved plate of Rt. Hon. R. L. Borden and his first Ministers, and by an arrangement just made we are able to include readers of the B. C. Mining Exchange in the offer.



The above is a greatly reduced reproduction of this picture, which is 17 3-4 inches by 22 3-4 inches.

The group is redrawn from the latest photographs of the eighteen Ministers, who compose the advisers of His Royal Highness the Governor-General. It is printed in sepia on heavy board ready for framing, and will be of the greatest educational value in the home, the school and the library.

The Prime Minister, HON. R. L. BORDEN, occupies a central position, and is shown standing at the head of the Council table. Seated about him are his colleagues, in his first Ministry.

HON. L. P. PELLETIER—Postmaster-General.

HON. DR. REID—Minister of Customs.

HON. MARTIN BURRELL—Minister of Agriculture.

HON. SAM HUGHES—Minister of Militia.

HON. ROBERT ROGERS—Minister of the Interior.

HON. DR. ROCHE—Secretary of State.

HON. W. B. NANTEL—Minister of Inland Revenue.

HON. G. E. DOHERTY—Minister of Justice.

HON. J. D. HAZEN—Minister of Marine.

HON. F. D. MONK—Minister of Public Works.

HON. W. T. WHITE—Minister of Finance.

HON. T. W. CROTHERS—Minister of Labor.

HON. GEO. E. FOSTER—Minister of Trade and Commerce.

HON. FRANK COCHRANE—Minister of Railways.

HON. J. A. LOUGHEED } Ministers

HON. A. E. KEMP

HON. G. H. PERLEY } without portfolio.

Dimly in the background the features of Sir John Macdonald look down on his successors.

HOW TO OBTAIN THE PICTURE

This fine engraving, of which a limited number have been prepared, will be sent **FREE OF CHARGE** to paid in advance subscribers to the B. C. Mining Exchange and the Vancouver Daily News-Advertiser.

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BRITISH COLUMBIA

THE MINERAL PROVINCE OF CANADA

Gold, Silver, Lead, Copper, Coal, Coke, Iron, Zinc, Platinum, etc.

The aggregate value of the Mineral Production of British Columbia to the end of 1911 is

\$397,696,722

As follows: Placer Gold, \$71,639,103; Lode Gold, \$65,536,580; (Total Gold, \$137,175,683); Silver, \$32,053,895; Lead, \$25,715, 126; Copper, \$65,315,049; Zinc, Iron, etc., \$1,212,264; Coal and Coke, \$122,084,343; Building Stone, Brick, Cement, etc., \$14,140,362.

The substantial progress of the Mining Industry of the Province is strikingly exhibited in the following table, which shows the value of production for successive five-year periods:

For all years to 1891, inclusive.....	\$ 78,111,539
For five years, 1892-1896.....	23,943,658
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For five years, 1902-1906.....	101,401,734
For five years, 1907-1911.....	124,053,000

Aggregate value of Mineral Production..... \$397,696,722

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